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CONTENTS.

The Coming Conventions 25
An Editorial Causerie 25
New England News 26
Questions and Answers:
- Tight Joints On Old Radiators 27
- Points On Drawing 27
- Vapor-Jobs vs. Hot-Water Heating 28
- Wants Information About Devitalized Air 28
- Why Do Gas-Pipes Freeze Up? 28

The Milwaukee Meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers..... 28
"Domestic Engineering" Cartoon on the "Dangers of Under-Estimating," No. XXI. 29
A Simple Method of Determining Sizes of Pipes for Low-Pressure Steam-Heating 30
Business-Management:
- On Educating the Householder 35
- The Lead-Pipe Complaint 35
- How About It, Mr. Master? 36
- Do You Advertise Unconsciously? 36
- Needed In Business—Strict Attention to De-tail.. 36
- Philosophical Rules 36

Association News:
- Master Plumbers in Washington, D. C., Hold Annual Meeting 37
- Schenectady Plumbers Elect Officers 37
- Syracuse Master Plumbers Elect Officers 37
- The Annual Dinner of the Plumbing Department at Washington, D. C. 37
- Manhattan Plumbers Elect Officers 37
- The Annual Dinner of Master Plumbers at Albany, N. Y. 37
- Convention-Dates 37

Roughing-in Stacks and Branches 38
The Metal-Market:
- Continued Decline in Pig-Iron Production 40

Philadelphia Jottings 40
A Practical Manual of Steam and Hot-Water Heating. 41
Among the Wholesalers:
- Nelson Valve Co. Very Busy—The Perfection Heater & Purifier Co., Inc.—Will Make Vacuum-Cleaning Systems—The P. F. A. Holds 204th Meeting—Humphrey Co's. Salesmen's Annual Meeting—Entertainment Features of the Annual Meeting of the American Society of Heating & Ventilating Engineers 43
- Another Step Forward in the "Naco" Movement—Bay State Brass Co's. Plant Sold at Public Auction 44
- Standard Manufacturing Co's. Annual Dinner—Steam-Heating Appliances in Transvaal, South Africa—Boilers, Furnaces and Ranges—Personal Mention 45

The Flight of News:
- New York News 46
- News from Philadelphia 46
- New Jersey Jottings 46

Obituary: Charles Kostlevy; Edgar M. Joralemon; Roswell K. Peck 47
Milwaukee and Wisconsin News 47
Eight Bath-Rooms in One Flat is No Idle Tale 47
Pacific Coast Letter 48
A Quebec Plumber's Order 61a
Classified Advertisements 62a
Index to Advertisers 64a
"Domestic Engineering's" Buyers' Guide 66-68a

THE COMING CONVENTIONS.

The list of set dates for the conventions of the different associations of master plumbers, in the different states in which they exist, is steadily growing. The plumbers of Iowa set the ball rolling on January 16th at Waterloo, Ia. A most interesting program has been prepared and it is to be expected that the attendance will be in excess of any previous gathering of that association. Other conventions follow on from week to week with scant intermissions till the national convention at Galveston. We would urge our readers to get the convention habit. It is one of those habits that promote longevity and insure a period of rest from the humdrum of business cares. The stability of the trades' many enterprises depends largely on the co-operative spirit that exists between its members.

There is no association so big that it will not be the better for your active association with it. There is no man so great that he cannot be helped by joining his trade's association. The welding together of men's minds and personalities in the crucible of association produces the precious elements—friendship, charity, well-directed energy and sane industrial activity. Add your strength to the strength of others at these forthcoming convention meetings and you will be surprised how much you will have gained. Look for the date in our column, headed "Convention Dates," published each week, and make up your mind now that you will be present at your state associational meeting.

AN EDITORIAL CAUSERIE.

We have had much to say about the evils of price-cutting, and yet we have only commenced to talk about them. There is no effect without its cause. Price-cutting is caused by mental near-sightedness It is a species of defective commercial vision. This is best understood by the analogy of examining a large oriental carpet or tapestry. If you stand up too close to the work your vision sees much detail without much conception of the purpose for which the detail is being carried out. Step back a few feet and your eye embraces the whole scheme of color and work. Form and function are at once ap-

parent. Purpose and harmony of execution are clearly manifested. So it is with the man who looks at his daily work at too close a range. He becomes engrossed by the details of an every-day task. He takes no time to step back and see the relationship of this part of his life's work to the rest of the woof and web. Because he does this he cuts the price and the weaving is not pleasing. It is a good thing to step back to survey our work from time to time.

It is a great gift to be able to go to a convention and be able to stand on one's feet and take intelligent part in the discussions on the topics presented. It is a pleasure and of educative value to the hearers and the power of self-expression is, when exercised, of benefit to its possessor. There are a few, of course, who have mistaken the power of speech for the gift of tongue and wander on interminably like the parson of Stockton.

"His talk was like the stream that runs,
With rapid change from rocks to roses;
It slipped from politics to puns,
It passed from Mohammed to Moses.
It began with the laws that keep
The planets in their radiant courses,
To end with some precept deep,
For dressing eels or shoeing horses."

Fortunately this fault is so easily detected that imitators are rare, save in Congress. Add the art of thinking and expressing yourself in public to your list of accomplishments this year. You will find it an invaluable aid as your years of experience and useful service bring you positions of trust and honorable service.

"The best things in life have nothing whatever to do with money." Write that on a card and tack it up on the wall near the desk where you can read it every day till you have learned its lesson and it has become part of yourself.

The thoughts you have today are the foundations of your actions tomorrow. Each day's actions are links in the chain of custom. It is well to remember that a chain is no stronger than its weakest link. See that your thinking, therefore, is up to the specifications demanded by the strains of life.

The man who possesses no curiosity concerning the many interests which surround him in his own line of industry and in others; the man who has not acquired the habit of wondering about something; the man who is not accustomed to the daily handling of the three keys to knowledge—Why? When? and Where?; such a man, no matter how many accomplishments he may seem to possess, is like a pair of spectacles without eyes behind them.

NEW ENGLAND NEWS.

Frederick J. Wolfel, New Canaan, Conn., has been awarded the contract for plumbing a new residence which is being erected in Montclair, N. J., for John W. Allen, a wealthy resident of that town. It is one of the largest contracts that has ever been undertaken by Mr. Wolfel.

An ordinance providing for the appointment of an inspector of plumbing is being considered by the city government of Bridgeport, Conn. At a hearing on the subject given by the ordinance committee of the board of aldermen local plumbers appeared and urged the adoption of such a law.

The city of Haverhill, Mass., has asked the legislature for permission to construct and operate plants for heat, light and power for municipal use.

Hebermehl Bros., Bridgeport, Conn., have the contract for plumbing and heating a two-family house which is being erected on Catherine street in that city for Burr & Knapp. The same contractors are to do the plumbing and furnace heating in a new house which is being erected on Stratford avenue for Daniel Hoffman. This is also a two-apartment house.

W. J. Casey and G. W. Brown, Bridgeport, Conn., both of whom were formerly associated with Rowe, Jackman & Co., have started in the plumbing business for themselves and have opened a place of business at 678 Main street, Bridgeport.

O'Toole Bros., Clinton, Mass., have been awarded the contract for installing a heating plant at the new factory of the Sigsbee Co., in Ayer, Mass. This is one of the largest contracts in this line that has been placed in this vicinity for a long time.

Carlson & Benson, Bridgeport, Conn., have taken the contract for plumbing and heating a two-family house on Morehouse street in that city for Max Christensen.

The committee appointed by the town of Leominster, Mass., to look into the matter of erecting a new town-hall and a central-heating and lighting plant for the town have reported that the proposed work would probably cost at least $183,000.

The Barlow Bros., Waterbury, Conn., has been awarded the contract for plumbing and heating the new house which N. A. Upham is erecting on Willow street.

A smoky fire which burned out a small two-story brick block at Waterville, Me., occupied by F. L. Learned, a plumber, caused damage estimated at $25,000. The loss on the building was $7,500 and on Mr. Learned's stock $5,000, the balance of the $25,000 being on stock and fixtures in adjoining stores, there being a clothing store on one side and a furniture establishment on the other. Mr. Learned's loss was covered by insurance. The cause of the fire is not known.

C. R. Elder has resigned as manager of the Mutual Plumbing and Heating Co., at Amherst, Mass., but will continue to be associated with the company in other capacities.

A modern heating plant is to be installed in Wood Memorial church at South Lawrence, Mass. The contract is in the hands of the Wright Stafford Boiler Works, of Lawrence, Mass.

L. H. Mills, Bridgeport, Conn., has the contract for heating and plumbing in the new office building of the United Illuminating Co., which is now in process of construction at the corner of Broad and Cannon streets.

J. H. Alvord, Winsted, Conn., has the contract for plumbing in J. A. Warner's new house in that city.

The completion of the first public-comfort station undertaken by the city of Malden, Mass., has aroused unusual interest and already there is talk of other similar buildings in different parts of the city. The first station, just completed, is located under the city hall building.

M. J. Daly & Sons, Waterbury, Conn, have the contract for plumbing and heating a nine-room house which is soon to be erected on Hewlett street in that city for A. I. Chatfield. The house will have all modern improvements.

The Barlow Bros. Co., Waterbury, Conn., have been awarded the contracts for plumbing and heating in G. L. Dexter's new house on Euclid avenue, W. P. Lamb's new residence and for the new addition to the Westover School.

QUESTIONS AND ANSWERS

TIGHT JOINTS ON OLD RADIATORS.

Editor "Domestic Engineering":—I have several old radiators to repair on some work and they are of both varieties, the push-nipple and the screw-nipple. Will you be kind enough to tell me how I can make a sure job of it?

J. L. G.

Disconnect the radiators and take them out to the barn or into the yard. It is, of course, possible to do the work in the room, but the average fitter will be sure to do more or less damage. Get the sections apart. If of the push-nipple variety this will not be a very difficult job. Clean both the nipple and the place in the radiator where the nipple fits in. After doing this the nipple may be covered with some standard lubricant and the sections started together. It would help to secure good results, before the sections are pulled tight, to wind some wicking around the nipple in order to pack the joint more tightly.

In making tight the nipple of the screw variety, if it seems to be too loose and you have any doubts as to its holding tight, you can wind some single strands of wicking into the threads and they should take up the little space which, otherwise, would cause a leak and make you do the work all over again. You will please take note of the fact that we have not advised the use of white lead on either of these jobs, and unless you watch out, the fitter will no doubt use it.

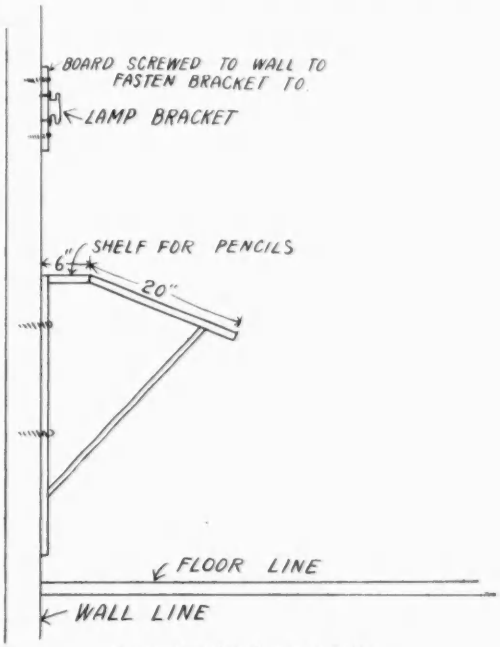
THAT STOPPED-UP SINK.

Editor "Domestic Engineering":—Will you be kind enough to tell me what will cut the grease out of the trap of the kitchen sink, and greatly oblige? "Subscriber."

Use concentrated lye or some other solvent of grease. It is a good plan to have what is called "the plumber's friend" around the house. This small force plunger will save its cost many times over in the course of the year and its cost is trifling when compared with the amount of good that can be accomplished by its use. By using this instrument frequently, the traps need never get stopped up and much annoyance will be avoided.

POINTS ON DRAWING.

Editor "Domestic Engineering":—Replying to W. H., whose enquiry appeared in the Questions and Answers Department in the issue of Dec. 24, 1910, I would recommend the following described suggestions: First, read carefully and pay particular attention to and do the work as outlined in the answer given by you to his enquiry, and in addition devote as much time as can be allowed to the study of free-hand drawing. Procure some good text book treating on free-hand drawing, study same freely, and in addition procure a quantity of good quality transparent drawing or tracing paper and proceed to practice free-hand drawing by placing the sheet over any published drawing which it is desired to reproduce and trace same over with a pencil. By this I mean to adopt the plan of tracing over illustrations of piping plans, plumbing outfits, etc., such as are given in the volumes of "Domestic Engineering," paying particular attention to begin with simple drawings, ones which appear to be plain and easily made, and then by diligent and careful practice, and that alone, may the ability to make a good free-hand drawing be acquired, and remember that it is usually the case when beginning to study a new subject one finds it sometimes rather hard and difficult and perhaps a little discouraging, but these are things which must be expected, and it is up to the student to persevere until he overcomes any obstacles which may appear to impede his progress. Another plan which possesses good practical value is to procure a good transparent drawing slate and then by



Suggestion for Drafting-Table.

placing the illustration in its proper place the subject may be drawn and redrawn as often as desired.

Two good points in regard to self-study in the line of drawing either mechanical or free-hand drawing is for the student to provide himself with proper materials to do the work with and a place where he may carry on the work without being annoyed or interrupted. If room is scarce a suitable outfit for all ordinary purposes may be arranged within a space 26x26 inches, making extra allowance for room for a chair to accommodate the user. An outfit which is now in practical use is shown in the illustration. The cut shows a bracket arranged to accommodate a kerosene lamp, but any other kind of a lamp may be arranged according to the same plan, and if either gas or electricity is used and it would be inconvenient to provide either of these described lights for the table, a man with the right kind of a get-up to him could easily install a kerosene lamp outfit to apply for the purpose. The advantage of having a light arranged directly over the table appears without any further explanation. For details regarding the outfit refer to the illustration. The table may be arranged as a folding outfit if it is desired, also it may be made smaller if required. An

outfit such as described can easily be arranged in a bedroom or other suitable place and may be had at a very reasonable cost.

The plan as outlined above would seem to fill the bill as far as the preparatory work is concerned, and if any additional information is desired write to the Questions and Answers Department, stating plainly and fully just what information is desired. L. V.

VAPOR JOBS VS. HOT-WATER HEATING.

Editor "Domestic Engineering":—In the issue of December 17th, I notice a letter from a party down in Maryland who says, that in the past season he has installed several vapor jobs, and that he wishes to know if they are more economical for residences than the hot-water system.

Replying to this question, I will state that my experience for the past 20 years has taught me that any job, or any boiler, will consume about all the fuel that you want to put through the fire pot. In some places the vapor job might work to perfection; so also would the hot-water system. You have got to adjust the job, in one case, to the residence, and also it must be adjusted to the owner's satisfaction.

Now here is a part of the situation that the average heating contractor almost entirely neglects. He puts in, we will say, a good steam job in a certain house. It works fine. Very well, he figures, steam will work all right in the other five or six jobs that he has on his books. So he goes ahead and puts in the work and has one or perhaps two failures. Why? Simply because he did not study both the residences and his customers. It comes down to a required knowledge of building construction and human nature, and those are two points upon which the average fitter has not put much time or study.

The longer one is in this game, the more clearly can he see the need of applying common sense and business principles to it, and I want in this connection to express my appreciation of your new departments, which have done much in the past year to bring out entirely different thoughts from the trade on these lines and they also have proved that we have some very good thinking men in our ranks. Trusting that the good work may continue, I am,

Yours truly,

New York. "Knickerbocker."

WANTS INFORMATION ABOUT DEVITALIZED AIR.

Editor "Domestic Engineering":—With reference to the articles on the "Devitalizing of Air by Heating" in a recent issue of your journal, kindly permit me to ask a question:

Now, suppose I require a certain quantity of air for ventilation, to be delivered at a certain temperature, say 80 deg., if I heat all this quantity by means of a heater it appears it loses some of its value to the occupant of the room. But suppose I heat half of this air to a high temperature and by means of a mixing damper mix with it fresh air untempered to give a resulting temperature of 80 deg., how does it compare with the air delivered in the first case? Will mixing with tempered air devitalize it? In addition to answering this could you give a brief description of the Lynch system? "Winnipeg Reader."

The air in the latter case will be better quality than in the first case. It is impossible, however, to state whether the air-movement or circulation will be the same unless data were furnished as to position and size of inlets and outlets and the dimensions of the room.

There is no Lynch system in the ordinary understanding of the word "system." The Lynch apparatus consists of a special ventilating appliance attached to the lower sash of each window of the building. The main features of its construction are a series of screens, each saw-tooth shape, one above the other, the screens having a wider mesh at the bottom and diminishing to a fine mesh at the top. The air in its passage through these screens has an alternating diagonal movement through the admission-box. This prevents drafts and shakes the dust out of the air so that it is practically dustless and enters the room without draft from the emission box on the inside of the window. The amount of air admitted from this ventilator is controllable by a small hinged lid at the side of the box. In actual operation it has been demonstrated at schools, office buildings, and residences, that a sufficient quantity of air is obtained of excellent quality without artificial means of air-introduction.

WHY DO GAS-PIPES FREEZE UP?

Editor "Domestic Engineering":—Will you kindly tell me why gas-pipes sometimes will freeze up and thus give much trouble? How can this be avoided? L. S.

They freeze up because the pipes are not protected from the cold. Gas-pipes should not be exposed and if they are, they should be covered thoroughly to keep off the cold. The moisture in the gas will accumulate on the inside of the pipe in the form of ice and gradually the pipe will become closed up. Many plumbers do not think of this and so gas-pipes are run pretty much anywhere and after any fashion and much trouble is the result. Keep your piping from exposed places as much as possible, see to it that there are no traps in the runs and you should have less difficulty in making the jobs come through all right.

THE MILWAUKEE MEETING OF THE AMERICAN SOCIETY OF INSPECTORS OF PLUMBING AND SANITARY ENGINEERS.

The American Society of Inspectors of Plumbing and Sanitary Engineers will hold its annual convention at Milwaukee, February 6, 7 and 8, 1911, as announced previously in these columns. The sessions will be held in the council chamber and headquarters will be established at the St. Charles Hotel. Members and guests who expect to attend should make their reservations as far in advance as possible.

Show-rooms for the display of plumbing fixtures and devices have been procured at headquarters, and applications for information and space should be made to Mr. Geo. Stolz, plumbing inspector, Milwaukee, Wis., who is the chairman of the committee on arrangements.

An excellent program is assured and among other things provided by the hospitable Milwaukeans are illustrated lectures on the System of Sewage Disposal at Milwaukee, by Chas. J. Poetsch, city engineer; The Water Works and Water Distribution, by Thos. McMillan; The Incinerating Plant and Garbage Disposal, by Mr. Greely, Superintendent.

A visit to the Incinerating Plant via the fire-boat has been arranged, also a visit to the Pabst Brewery, and luncheon.

Some good papers are being prepared on live subjects, and that there will be keen interest and free discussion goes without saying.

The earnestness of representatives from the smaller cities, and their keen sense of responsibility should be an incentive to the plumbing inspection staffs of larger cities. Unfortunately the latter find it so difficult to interest their municipalities in the benefits to be derived from the interchange of ideas in conventions of this kind that they give up the struggle as hopeless.

"Domestic Engineering" Cartoon on "The Dangers of Under-Estimating—XXI.

The Successful Bidder. "What Did I Forget?"

Adapted from the "Official Bulletin" of the National Association of Master Steam and Hot-Water Fitters.

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

A Simple Method of Determining Sizes of Pipes for Low-Pressure Steam-Heating

By F. E. Giesecke

Consulting Architect, Professor of Architectural Engineering, Agricultural and Mechanical College of Texas

The flow-pipe of a steam-heating system should be of such a size that, with a definite and predetermined loss or drop in pressure, the required maximum quantity of steam will flow from the steam-main to the radiators, where the latent heat of the steam is to be transmitted to the surrounding air.

Before determining the sizes of the pipes, the heating engineer should therefore decide upon the drop in steam-pressure, per unit-length of pipe, which shall obtain in the pipe when the maximum quantity of heat is being conveyed through it. To do this, the engineer must take into account the relative economy of using a high boiler-pressure and small pipes or a low boiler-pressure and large pipes, and he must consider the available steam-pressure, the distance from the boiler to the farthest radiator, and the elevation of the lowest radiator above the boiler, for the drop in the steam-pressure must be so small that the pressure at the farthest radiator will still be high enough to force a sufficient quantity of steam into the radiator and also so small that the water in the return-line will not back up into the lowest radiator.

Having judiciously fixed the drop in pressure and determined the size of the pipe corresponding thereto, every variation from that size is disadvantageous.

To increase the size of the pipe is disadvantageous because that will increase the first cost of the system and also the quantity of heat lost by radiation from the steam pipe.

To decrease the size of the pipe is disadvantageous because that will either make it impossible to convey the required quantity of heat through the pipe or it will make it necessary to increase the drop in pressure, which will entail a higher boiler-pressure and a correspondingly lower boiler-efficiency, other conditions remaining the same.

A committee of the American Society of Heating & Ventilating Engineers investigated the practice of designing steam-mains and found that a drop in pressure of one ounce in 100 ft. represents the average of the best present practice of design.

A drop in pressure of one ounce in 100 ft. is equal to a drop in pressure of .63 lb. in 1,000 ft.

For ordinary low-pressure heating, the writer recommends a drop in pressure of about 2.5 lb. in 1,000 ft. in the longest pipe-line and a correspondingly greater drop in pressure in the shorter pipe-lines so that, approximately at least, the pressure will be the same at all radiators.

In a system in which the drop in pressure is 2.5 lb. in 1,000 ft. and the distance from the boiler to the farthest radiator is 150 ft., and in which it is desired to maintain a pressure of .1 lb. at the radiator, the boiler-pressure would have to be .48 lb. and the highest water-line in the return-pipe would be about 11 ins. higher than that in the boiler, when the maximum quantity of heat is being conveyed to the radiator.

The frictional resistances of pipe-fittings to the flow of steam are so small when compared with the frictional resistance of the pipe that they may be neglected in these calculations.

Having assumed the drop in pressure to be used in the flow-pipe of the system, it is necessary to find the velocity at which the steam will flow through the several pipes when the drop in pressure is as assumed.

The velocity of the steam corresponding to a certain drop in pressure depends on the size of the pipe, on the average steam-pressure in the pipe, and on the quantity of heat lost by radiation from the pipe.

The relations between velocity and drop in pressure have been determined by experiment and are expressed by algebraic formulas, some of which are very complex.

The diagram of Fig. 1 shows the relation between drop in pressure and velocity of flow as determined by Babcock's formula, the average steam-pressure being 1 lb.

To illustrate the use of this diagram, let it be required to find the velocity of the steam in a 2-in. pipe when the drop or loss of pressure is 3 lb. in 1,000 ft. To do this, find 3 in the left margin; through that point trace a horizontal line until it intersects the curved line marked 2 in.; from that point trace a vertical line downward until it intersects the lower margin at about 63, which is the required velocity of the steam in feet per second.

Similarly, the velocities corresponding to a drop in pressure of 2.5 lb. in 1,000 ft. for a ½-in. and a 6-in. pipe are, respectively, 20 and 130 ft. per second.

The diagram of Fig. 2 shows the relation between the drop in pressure and the velocity of flow as determined by Rietschel's formula, the average pressure being 1 lb.

Prof. Rietschel's formula takes the heat lost by radiation from the pipe into account. To determine this loss of heat for the construction of the diagram in Fig. 2, a bare pipe 10 ft. long was considered and it was assumed that the pipe would lose 350 B. t. u. per sq. ft. per hour.

If a longer pipe had been considered the heat-loss would have been proportionately larger, but the loss of pressure per foot of pipe, corresponding to a given velocity, would have been only slightly greater. For example, in the case of a 1-in. pipe and a velocity of 60 ft. per sec., the drop in pressure, per foot of pipe, would be .00496 for a bare pipe 10 ft. long and .00504 for a bare pipe 15 ft. long. The heat-loss of a well-insulated pipe is about one-fifth as much as that of a bare pipe.

It is interesting to note that the two diagrams, calculated respectively by Babcock's and Rietschel's formulas, give nearly the same values for a 2½-in. pipe, but that for smaller pipes Babcock's formula shows lower velocities and for larger pipes it shows higher velocities than Rietschel's formula, the drop in pressure being the same in both cases.

The difference between the two diagrams is not sufficient to make a material difference in the calculations for the pipes ordinarily used in heating buildings and either diagram may be used, if the average steam-pressure is approximately 1 lb., but for long-distance transmissions, accurate calculations should be made.

Having determined the velocity with which the steam is to flow through the pipe, and knowing the quantity of heat to be conveyed, the size of the pipe can be calculated.

These calculations are somewhat tedious; to obviate their necessity the diagram shown in Fig. 3 was constructed.

To illustrate the use of this diagram the following problems will be solved:

Pipe-Size Determinations—Figs. 1 and 2

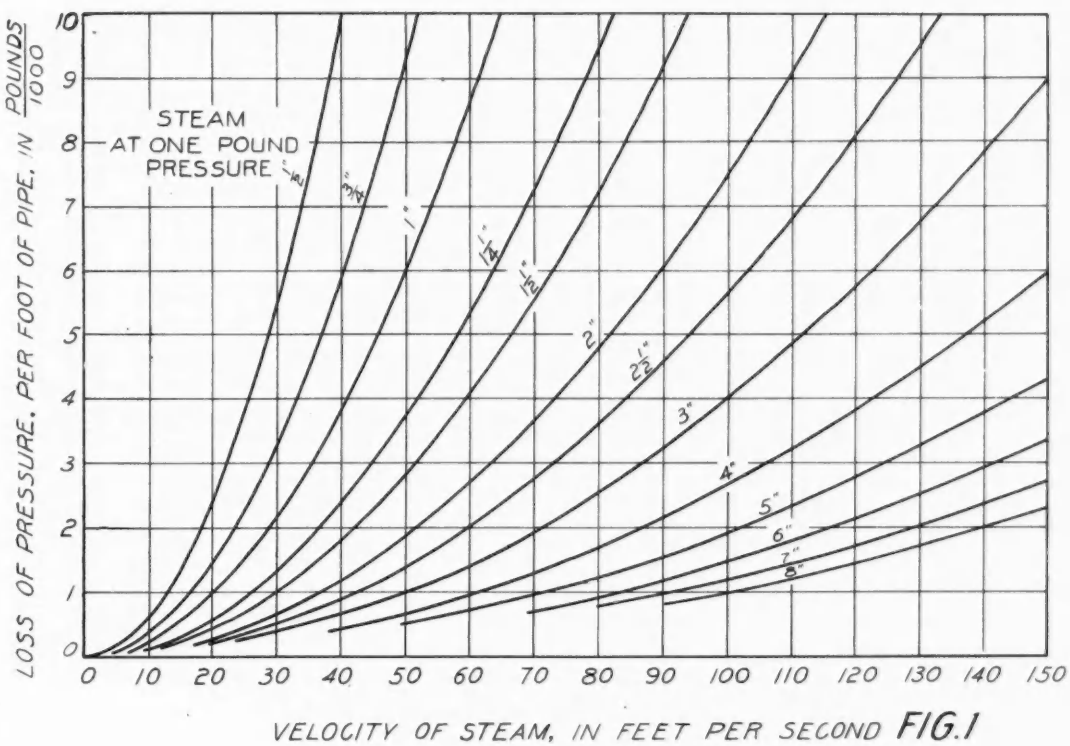

STEAM
AT ONE POUND
PRESSURE
LOSS OF PRESSURE, PER FOOT OF PIPE, IN POUNDS/1000
VELOCITY OF STEAM, IN FEET PER SECOND
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
1 2 3 4 5 6 7 8 9 10
1" 1¼" 1½" 2" 2½" 3" 4" 5" 6" 7" 8"

FIG. 1

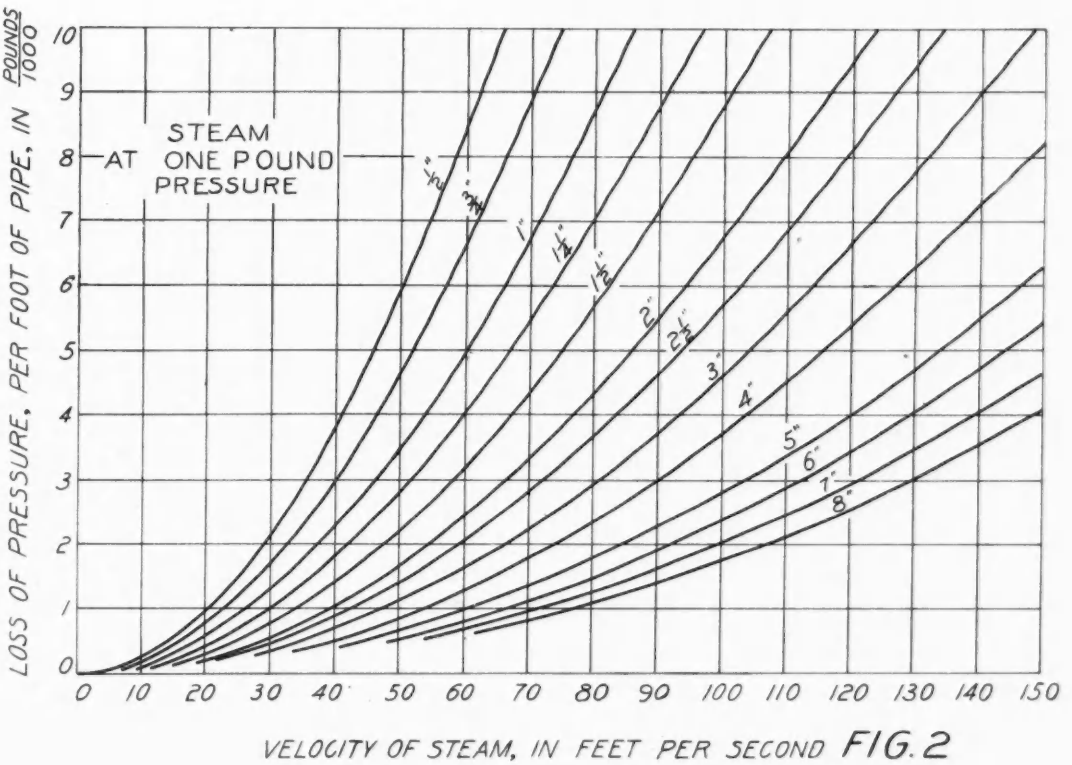

STEAM
AT ONE POUND
PRESSURE
LOSS OF PRESSURE, PER FOOT OF PIPE, IN POUNDS/1000
VELOCITY OF STEAM, IN FEET PER SECOND
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
1 2 3 4 5 6 7 8 9 10
1" 1¼" 1½" 2" 2½" 3" 4" 5" 6" 7" 8"

FIG. 2

Prob. 1. How many B. t. u. will be conveyed per hour through a 1-in. pipe if the steam has a velocity of 100 ft. per second and a pressure of 1 lb.?

Solution: On the lower margin find 1 in.; from that point trace a vertical line upward until it intersects the curved line marked 100 ft. sec.; from that point trace a horizontal line to the left until it intersects the inclined line marked 1 lb.; from there trace a vertical line downward to the lower margin and read the answer: namely, 80,000 B. t. u. per hour.

Prob. 2. What must be the velocity of the steam in order that a 4-in. pipe may convey 600,000 B. t. u. per hour, the steam-pressure being 3 lb.

Solution: On the upper margin find 600,000; from that point trace a vertical line downward until it intersects the inclined line marked 3 lb.; from that point trace a horizontal line to the right and find the point where this line would be intersected by a vertical line traced upward from the 4-in. mark on the lower margin; this point of intersection is near the 40-ft. velocity-curve and hence the required velocity is about 40 ft. per second.

Prob. 3. What size pipe should be used to convey 200,000 B. t. u. per hour with a drop in pressure of 2.5 lb. in 1,000 ft., the average pressure of the steam being 1 lb.

Solution: On the margin find 200,000 B. t. u.; from that point trace a vertical line until it intersects the inclined line marked 1 lb.; from that point trace a horizontal line toward the right and note the points where it intersects the several velocity-curves; from those points of intersection trace vertical lines downward and note the corresponding pipe-sizes; it will be evident that, for velocities of 100, 60 and 40 ft. respectively, the pipe-sizes are 1½, 2 and 2½ in.

Next examine Fig. 1 and note that for a 1½-in. pipe and a velocity of 100 ft. the drop in pressure is more than 10 lb.; for a 2-in. pipe and a velocity of 60 ft. it is a little less than 3 lb.; for a 2½-in. pipe and a velocity of 40 ft. it is a little less than 1 lb.; hence the 2-in. pipe is the standard pipe nearest in size to that required; it is slightly too small, but a 2½-in. pipe is considerably too large.

To simplify the use of the diagram of Fig. 3, the vertical lines representing pipe-sizes have been drawn as full lines through those velocity-curves which correspond to losses of pressure of 2.5 lb. or less in 1,000 ft., and as dotted lines through those curves which correspond to losses of pressure greater than 2.5 lb. in 1,000 ft.

Prob. 3 may, therefore, be readily solved as follows: Find 200,000 B. t. u. on the margin; from that point trace a vertical line until it intersects the inclined line marked 1 lb.; from that point trace a horizontal line to the right until it intersects the first full vertical line; this line shows the smallest pipe that can be used if the drop in pressure is not to exceed 2.5 lb. in 1,000 ft. In this case, it is a 2½-in. pipe; but since the horizontal line which was traced to the right to determine the pipe-size passed only slightly above the upper end of the full portion of the 2-in. pipe-line and considerably below the upper end of the full portion of the 2½-in. pipe-line, it is seen that the 2-in. pipe is slightly too small and the 2½-in. pipe considerably too large.

To illustrate the practical application of this method of determining the sizes of pipes for a heating system, let it be required to determine the sizes of the pipes for a low-pressure steam-heating system for a 2-story building having 16 radiators, each receiving 10,000 B. t. u. per hour, when the maximum quantity of heat is required.

The boiler is to be located under the center of the building and the piping arranged as shown in Fig. 4, for one-half of the building. Radiator *g* is farthest from the boiler; the pipe leading from the boiler to this radiator is divided into six sections lettered *ab*, *bc*, *cd*, *de*, *ef*, and *fg*; the lengths of these sections are determined from the plans of the building and the number of B. t. u. conveyed by each section is determined by adding the numbers of B.

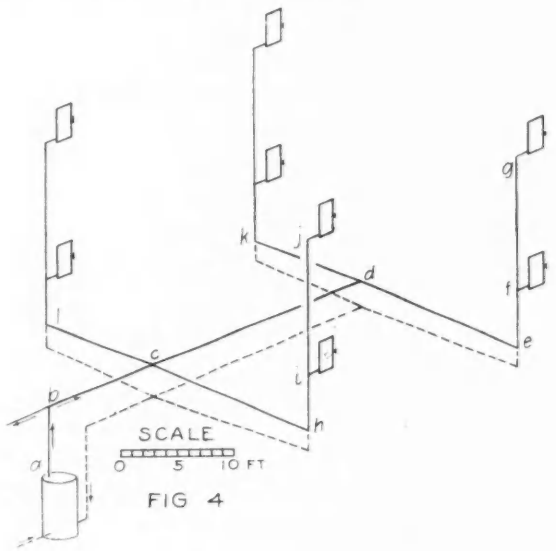


FIG 4

t. u. supplied to all the radiators which are served by the respective sections; the results are tabulated as shown in Table 1.

Having done this, assume an average steam-pressure, say 1 lb., or less, and an average drop in pressure, say 2.5 lb. or less in 1,000 ft., and find the nearest corresponding pipe sizes from the diagram of Fig. 3. Thus, for section *ab*, find 160,000 B. t. u. in the lower margin; from that point trace a vertical line upward until it intersects the 1-lb. line; from that point trace a horizontal line to the right until it intersects the nearest full vertical line representing a pipe size, in this case 2 in., which is the smallest standard pipe which will convey 160,000 B. t. u. per hour with a loss of pressure not exceeding 2.5 lb. in 1,000 ft. when the average steam pressure is about 1 lb.

Find the sizes of pipes for sections *bc*, *cd* and *de* in the same manner and record them, as shown, in Table 1.

The sizes of the pipes for sections *ef* and *fg* are determined differently because the pipes of these two sections serve under different conditions from those which exist in the four sections first named.

In the first four sections there is no water of condensation except that which forms in the pipe itself and that flows in the same direction as the steam; these four sections belong, therefore, to the class generally known as a two-pipe system.

In the last two sections the pipes have to convey the steam and the water of condensation from the radiators; the steam flows in one direction and the water of condensation in the opposite direction; these two sections belong therefore, to the class generally known as a one-pipe system.

It has been found from experience that in a one-pipe system the pipes should be about 50 per cent larger in area than in a two-pipe system. In the standard American pipes up to 3-in., each size is at least 50 per cent larger in area than the next smaller size except the 1½ and the 2½-in., which are respectively 36 and 42 per cent larger

Pipe-Size Determinations—Fig. 3.

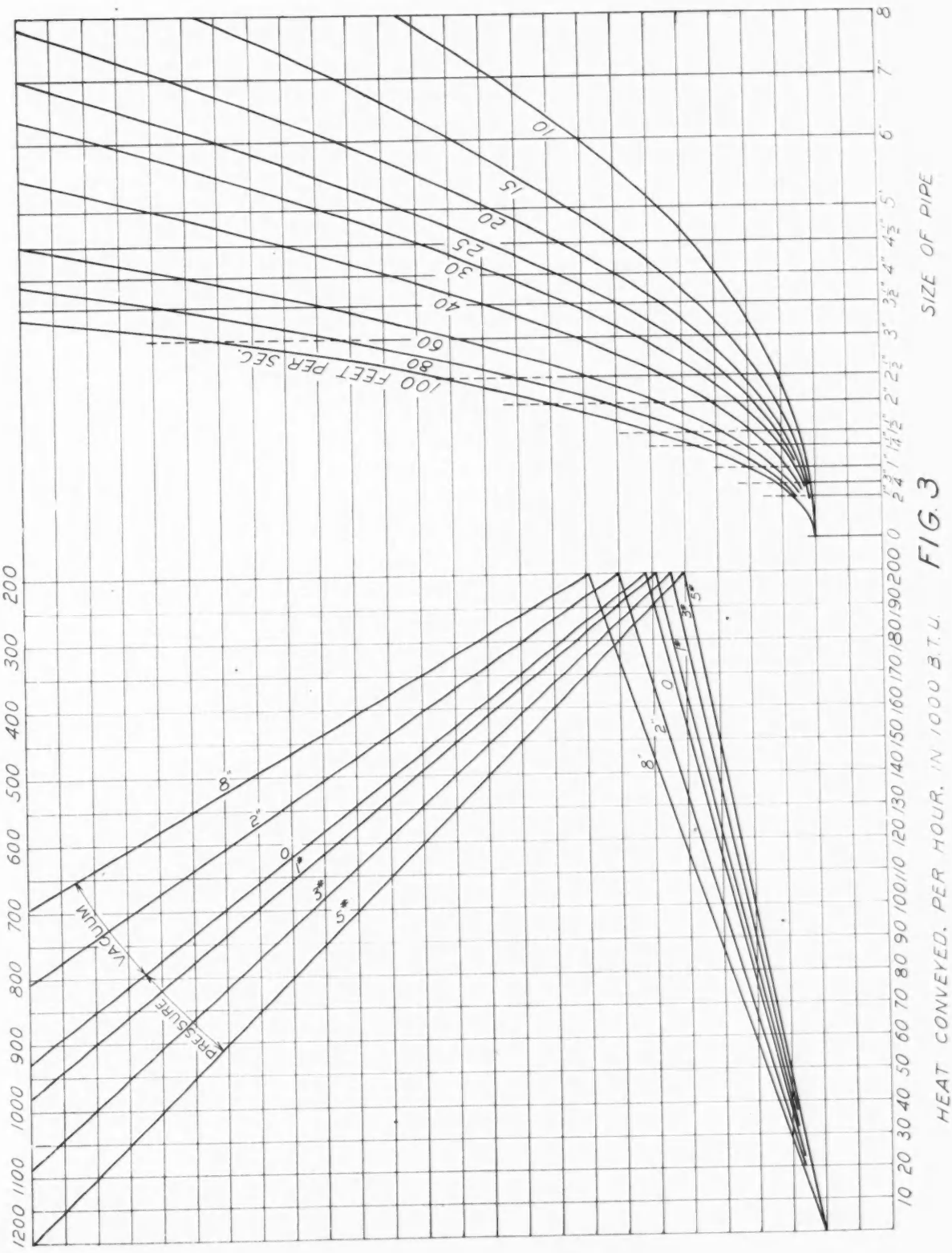


FIG. 3

than the next smaller sizes. Hence, to determine the sizes of the pipes for a one-pipe system proceed as explained for a two-pipe system and then take pipes one or two sizes larger, whichever is necessary to secure 50 per cent more area. This method was used above for sections *ef* and *fg*; the areas of pipes are published in various hand-books.

The rule to increase the pipe sizes 50 per cent in area if the water and steam flow in opposite directions is only applicable when the velocity of the steam is comparatively low. When this is not the case, a larger increase in area should be made, particularly in horizontal pipes. This will be treated more fully in a later paper.

Having determined the pipe sizes for the six sections, check the design by determining the loss of pressure. Thus, for section *ab* and 160,000 B. t. u. find from Fig. 3 the corresponding velocity, 50 ft. per second, and then, from Fig. 1, the corresponding drop in pressure, 1.9 lb. in 1,000 ft.; record these values in Table 1 and find the corresponding values for the sections *bc*, *cd*, and *de* in the same manner and record them.

Having determined the drop in pressure in 1,000 ft. in the several sections find the actual drop in each section by dividing the drop in 1,000 ft. by 1,000 and multiplying by the length of the section in feet. Thus, for section *ab*, the drop is $\frac{1.9}{1000} \times 6$, or .011 lb.

Find the drop in pressure in the other sections in the same manner and record in Table 1.

Note that in every case the drop in pressure is less than 2.5 lb.; this is due to taking the next larger standard pipe in every case and shows clearly that if the drop in pressure is to be about 2.5 lb. it is necessary to take the next smaller pipes in some cases so that the average will be about right.

Assuming a boiler-pressure of 1 lb., the steam-pressures at the several junction-points would be as follows:

At *a* 1,000, at *b* .989, at *c* .971, at *d* .945, at *e* .922 lb.

In order that the pressure at the junction-point *h* may be as low as at the junction-point *e*, the loss of pressure in the section *ch* must be as great as the loss of pressure in the two sections *cd* and *de* together, or equal to .049 lb.; since *ch* is 15 ft. long, the drop of pressure in this section must be at the rate of $\frac{.049}{15} \times 1{,}000$, or 3.2 lb. in 1,000 ft. The pipe must evidently be smaller than that used for section *de*; hence, try a ¾-in. pipe. It appears, from Figs. 3 and 1, that the resulting velocity would be about 40 ft. and the corresponding drop in pressure 6 lb. in 1,000 ft.; as this is almost twice as much as desired, a ¾-in. pipe is too small and a 1-in. pipe would have to be used, leaving the pressure at *h* slightly higher than at *e*. If it is desired to balance the two pressures, section *ch* must be made up partly of ¾-in. and partly of 1-in. pipe; thus, if 6 ft. of ¾-in. and 9 ft. of 1-in. pipe were used the drop of pressure in this section would be .050 lb.

The sections *hi* and *ij* should be of the same size pipe as *ef* and *fg*.

The drop in pressure in sections *ef* and *fg* has not been referred to since the pipes were made larger than necessary to convey the steam with a loss of pressure of 2.5 lb. in 1,000 ft., and since the conditions are complicated by the water of condensation in those pipes. If we know that the required quantity of steam will be delivered at the junction points *e*, *h*, *k*, and *l*, etc., with a pressure sufficiently high to supply the radiators with steam in a two-pipe system, if the pipes were only two-thirds as large as those used, we may be sure that the system will operate satisfactorily even though we do not know definitely how the pressure varies in the sections belonging to the one-pipe system, except, as noted above, in cases of high velocities of steam and particularly in horizontal pipes.

The heating contractor should not get the idea that the pipe *ab* MUST be larger than the pipe *bc* because it conveys a larger quantity of heat. The pipe *ab* may be of the same size or even smaller than the pipe *bc* if proper provision is made for the increased loss of pressure due to the smaller pipe. Thus, if, for any reason, it should be desirable to make *ab* the same size as *bc*, namely, 1½ in., the velocity in *ab* would then be, from Fig. 3, 80 ft., and the loss of pressure, from Fig. 1, 7.2 lb. in 1,000 ft., or .043 lb. in 6 ft.; i. e., .032 lb. more than if a 2-in. pipe were used; it would then be necessary to take care of this additional loss of pressure either by increasing the boiler pressure or by increasing the size of some other pipe, *de* for example, so as to reduce the loss of pressure in that pipe as much as it is increased in *ab*.

It should also be carefully noted that it is not at all necessary to have the same loss of pressure per foot of pipe throughout the entire length of the longest pipe. That was assumed above only for convenience; in large systems it is frequently economical to use a much larger loss of pressure per foot of pipe near the boiler than near the radiators in order to avoid the use of very large pipes which are always costly to purchase and to install.

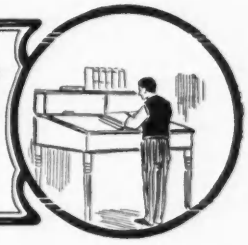
The return-pipes from *e*, *h*, *k*, and *l* need only be large enough to carry the condensation back to the boiler without causing a back-pressure in the pipe-system; in this case the condensation at each of the points named is only that due to transmitting 20,000 B. t. u. per hour by means of steam at about 1-lb. pressure; the latent heat at this pressure is 964; hence 21 lb. of steam must be condensed per hour, forming a little less than 3 gal. of water of condensation. The pipe could, therefore, be quite small, but for practical considerations the return-pipe should never be smaller than ½ in. and should generally be only one or two sizes smaller than the corresponding steam-pipe.

In the above discussion the sizes of the pipes were determined with reference to the number of B. t. u. to be conveyed to the radiators and not with reference to the size of the radiation, because there is no definite relation between the size of the pipe and the size of the radiation. The size of the pipe depends upon the quantity of steam to be conveyed and that depends not only upon the size of the radiation, but also upon its shape, upon the material of which it is constructed, upon the pressure of the steam in the radiator, upon the velocity of the air in contact with the radiator, etc.

Section	Length	Number of B.T.U.	Size in Inches	Velocity	Unit Loss of Pressure	Total Loss of Pressure
ab	6	160,000	2	50	1.9	.011
bc	10	80,000	1 1/2	40	1.8	.018
cd	20	40,000	1 1/4	30	1.3	.026
de	15	20,000	1	25	1.5	.023
ef	5	20,000	1 1/4			
fg	12	10,000	1			

BUSINESS MANAGEMENT

NEW METHODS FOR OLD



ON EDUCATING THE HOUSEHOLDER.

Editor "Domestic Engineering:" I have read the letter of G. G. in your issue of Dec. 17, '10, and am very much astonished to think that anyone in the plumbing business should want to do as he suggests.

He says, "We should educate the householder to put on his own washers, including fuller balls; and that any twelve-year-old boy would do this work after having seen it done two or three times, and that if you send a journeyman to do the work, it will take him two hours at least and the job would cost two or three dollars."

In these days when the use of cast iron bends under closets, and cast brass traps with screw tappings are being used under bathroom floors, and screw pipe is used almost exclusively for water lines, there is too much for the "general public handy man, be your own plumber fellow," to tinker with, without educating him to do other work.

G. G.'s excuse for educating them to put on washers is to "keep them from kicking on the bill."

I would like to tell G. G. that the time for the millenium has not come, and until it does, the householder will continue to kick about his bills, and the plumber will have to hear them.

I wonder what kind of business a man does who is as much afraid of his customer as G. G. seems to be.

Think of it! Destroying his own business because he hasn't enough backbone to stand up and insist as a business man that the bill must be paid as it stands, whether it be for putting on washers, something a twelve-year-old boy could do (as he says), or whether it be for plumbing the whole house.

I sadly fear that G. G. does not have the future of the plumbing business at heart when he makes suggestions of this kind, or else he does not realize the danger of educating the public to "be its own plumber."

But to get back to the reason for all this,, he says "they kick on the bill." I venture to say that G. G. has his shop in the basement or in an alley, and that he carries his kit all day and makes his bills out at night. At any rate if I have not guessed right in this, I will take another guess and say that he is not a business man.

There are too many so-called master plumbers who get that name simply because they go out and work for the public, but they are not master plumbers, tney are simply journeymen, and not good ones at that. If they were, they would shoulder their tools for some employer who is a business man and work the regular hours and get the regular pay per day.

This is the class that cannot face their customer when it comes to the settlement of a bill. They have no system of bookkeeping, and after the bill is made out, could not make a duplicate if wanted.

The public has no confidence in a man like this and if it is unfortunate enough to have him do its work, it is no wonder it kicks on his bill, just on general principles if for nothing else.

Now, G. G., if your charge is just and right, why do you fear the complaints of the householder? You put the washers on at his request. You sent your man and he did the work. You charged for the man's time and the material, and if you have done this honestly, and the householder kicks and declares he will not pay, then you are justified in resorting to extreme measures to collect the bill.

The trouble with the public is that it thinks it knows more than they do, others before you have tried to educate them and failed, only giving them an inkling of some of the things in the plumbing business, and you know that "a little knowledge is a dangerous thing" sometimes, and often reacts on the man who constitutes himself the educator.

Now, when we teach him to put on washers, it means that he needs a wrench or two, and if you will not lend him your tools, he will buy tools of his own.

Then his water pipe bursts and since he has wrenches he does not see the necessity of hiring a plumber to do the work when he has the tools and can do it "just as good," so he measures the pipe and sends his boy around to the plumbing shop to get a piece cut.

This does not work in every case, but in each case that it does work it is so much less for the plumber to do; consequently educating the public along practical trade lines is destroying your own business.

The main trouble with the plumbing trade is that the master plumber is not a business man. Two-thirds of the so-called master plumbers should be working journey work with their tools on their shoulders and getting regular days' wages from their employers who are business men and master plumbers in reality.

In conclusion let me say that I have made a study of the plumbing business, and if the so-called master plumber described above would close out his business and work for days wages as a journeyman plumber, he would be better off in the long run, and it would be a blessing to his wife and family, who would be better provided for, if he were drawing his pay every Saturday night regularly.

I trust that I have not hurt G. G.'s feelings in this matter, but if he is one of the so-called master plumbers described above, let him consider the advice carefully and act accordingly.

Not-a-Mutt.

THE "LEAD-PIPE" COMPLAINT.

Editor "Domestic Engineering":—I am amazed at the plaint of "Lead-Pipe," in your issue of Dec. 17, in re hardware dealers "butting into" the plumbing business, wherein he mentions an "ad" for a tinsmith, plumber and steam-fitter, offering $18.00 per week the year around. Taking it for granted that "Lead-Pipe" is a union plumber at regular rates, I'll wager a dollar to a doughnut that if he had this $18.00 per week job he could save more money than he is doing now in the city. Eighteen dollars per week the year around amounts to $936.00 per year, and how many clerks in the city look upon a $1,000.00 salary as a good job? But, alas, I fear that "Lead-Pipe" could not hold down this $18.00 per week job; in fact, I know he could not, so he is forced to continue at his unsatisfactory job in the city and look with longing eyes

upon his more fortunate and more skilled brother in the country.

I know what I am talking about. I can furnish names and addresses of men skilled in these three trades (skilled enough to hold their jobs) who on $18.00 and even less have raised a family, bought their own homes and have money in bank—are men looked up to and respected as good business men.

The last year I was in business in Chicago I had two steam-fitters who each drew nearly $2,000.00 in wages that year, while I, the boss, drew barely enough to live on—and then busted. But neither of these workmen saved a dollar and were always complaining of hard times, and one was a pronounced Socialist, who looked upon me as one of the pampered classes, yet he knew I was on the ragged edge of failure. Do you suppose I could coax either of them to move to God's country at $18.00 per week? I could get them $20.00 to $24.00 if they could hold their jobs. Do you suppose they would leave the crowded city and have a little place of their own where their children could grow up good citizens? No, indeed.

I will have something to say later as to the skill of these tri-trade experts. "Michigan."

HOW ABOUT IT MR. MASTER?

There are a couple of questions, of an extremely personal nature, albeit we would like to ask and we hope that you are not too "set" to give an answer to one and perhaps both of them. "Honest confession is good for the soul," it is said, and do not be afraid to come across with the dope, confidentially, of course. We all make mistakes at times, but we gain confidence and doubly guard ourselves by a calm and unprejudiced examination of ourselves, the business and affairs in general.

Read these questions, make the examination and write us a good confidential letter. It will do your physiognomy good. We will now spring the questions:

1. During the year 1910, what was the best deal that you made?

2. During the same period of time, what was the biggest mistake you made?

DO YOU ADVERTISE UNCONSCIOUSLY?

Remember that you can, without any extra effort, advertise that your shop is careless of details and indifferent as to the general finish of work. Do it by looking "sloppy" yourself and letting your workmen follow the same fashion. Allow the shop and show-windows to become grimy and dirty, and don't prevent the dust from settling on the fixtures displayed.

In spite of the fact that much has been said on this seemingly thread-bare subject, there are plenty of shops that are a disgrace to the plumbing and heating business from the very filth that they exhibit. Possibly you may think that this is overdrawn, but you have but to take a short walk around almost any town of passable size and you will be convinced that we are correct in our assertion. Many plumbers, while claiming to install the most sanitary work, are, themselves, subjects for the dry-cleaning process. Water would have little effect. This "going snucks" with dirt and confusion seems to be taken as a matter of course by some who fairly glory in the dirt that they can create or lug about, thus they advertise themselves without an effort and, seemingly, without a care. While there is a certain amount of necessary dirt connected with the trade, much of it can be done away with by the exercise of a little care. Why not consider this matter and see just how much of the dirt you can possibly do away with, and still manage to hold on to an existence in this world? As your business stands for sanitary methods and cleanliness, why not employ some of the same at home? Turn this thought over in your mind for a few days and see if it gets any action.

Needed in Business

Strict Attention to De-Tail.

PHILOSOPHICAL RULES.

We are indebted to Mr. T. J. Reynolds, superintendent of Madison Square Garden for the following rules which he has adopted for his men and has posted in a conspicuous place in the building:

1. Don't lie—It wastes my time and yours. I'm sure to catch you in the end. That's the wrong end.

2. Watch your work, not the clock. A long day's work makes a long day short, and a day's short work makes my face long.

3. Give me more than I expect and I'll give you more than you expect. I can afford to increase your pay if you increase my profits.

4. You owe so much to yourself that you can't afford to owe anybody else. Keep out of debt or keep out of this building.

5. Dishonesty is never an accident. Good men, like good women, can't see temptation when they meet it.

6. Mind your own business and in time you'll have a business of your own to mind.

7. Don't do anything here which hurts your self respect. The employe who is willing to steal for me is capable of stealing from me.

8. It's none of my business what you do at night, but if dissipation affects what you do next day and you do half as much as I demand, you'll last half as long as you hoped.

9. Don't tell me what I'd like to hear, but what I ought to hear. I don't want a valet to my vanity, but I need one for my dollars.

10. Don't kick if I kick,—if you're worth while correcting, you're worth while keeping. I don't waste time cutting specks out of rotten apples.

No friend truer than knowledge.
No enemy worse than pride.

Association News.

MASTER PLUMBERS IN WASHINGTON, D. C., HOLD ANNUAL MEETING.

The Master Plumbers' Association of Washington, D. C., held its annual meeting Tuesday evening, January 3rd, in the Builders' Exchange in that city and elected the following officers for the ensuing year: President, Harry T. Suit; first vice-president, Frederick W. Quinter; second vice-president, D. E. Jenkins; secretary, Frederick C. Stelzer, 208 Seventh St., S. W.; treasurer, Samuel Artz; sergeant-at-arms, Wm. Conradis.

SCHENECTADY PLUMBERS ELECT OFFICERS.

The Master Plumbers' Association of Schenectady, N. Y., held its annual meeting at its rooms on State street in that city on Thursday evening, January 5th, and elected the following officers for the coming year: President, C. F. Shanks; vice-president, F. T. Wempel; treasurer, W. C. Vroman; secretary, Leroy Larned, 148 Broadway. The meeting was well-attended and the business session was followed by an elaborate banquet, which reflected great credit upon the committee having charge of this affair.

SYRACUSE MASTER PLUMBERS ELECT OFFICERS.

The Master Plumbers' Association, of Syracuse, N. Y., held its annual meeting in its rooms in the Snow Bldg., in that city on Tuesday, January 3rd, and elected officers for the ensuing year as follows: President, T. E. Clay; vice-president, August Schall; secretary, B. Joseph O'Donnell; treasurer, Chas. A. H. Kienzle; sergeant-at-arms, John Lavelle. After the meeting refreshments were served and a good time was enjoyed by those in attendance.

THE ANNUAL DINNER OF THE PLUMBING DEPARTMENT OF WASHINGTON, D. C.

The annual dinner of the Plumbing Inspection Department of the city of Washington, D. C., will be held the latter part of this month, and it is expected that this year which is the second, will eclipse the great initial celebration last February on the occasion of the dinner to Mr. Henry B. Davis, when he resigned as head of the plumbing office. This year's affair is in the hands of a committee of the employees but the definite date and place have not yet been decided upon.

MANHATTAN PLUMBERS ELECT OFFICERS.

The Manhattan Branch of the Greater New York Association of Master Plumbers held its annual election for the ensuing year on Tuesday evening, December 20th, at which the following officers were elected:

President, B. F. Donohue; vice-president, T. S. Cochrane; treasurer, T. J. Cummins; secretary, Geo. H Creasy; financial secretary, James Smith; sergt. at arms, Louis Moeschen; marshal, Harry Hemlin; trustees: T. A. Hill, chairman; Chas. Murphy, Jas. P. Knight, I. J. Brown Francis McNamara.

Representatives to Greater New York Association: James P. Knight, T. S. Cochrane, Isaac J. Brown, James Smith, T. J. Cummins, T. A. Hill, B. F. Donohoe, Ed. J. Brady, F. B. Lasette, Geo. H. Creasy, F. J. Fee, John Renehan, Jere L. Murphy, J. J. Falihee, J. Rossman, Chas. Murphy and John Hopkins.

THE ANNUAL DINNER OF THE MASTER PLUMBERS AT ALBANY, N. Y.

The annual reception and dinner of the Master Plumbers' Association of Albany, N. Y., will be held at "The Ten Eyck" in that city on Thursday evening, February 9, 1911. The guest of honor will be Frederick E. Fladd, of Rochester, president of the New York State Association of Master Plumbers. The reception will begin at 7:30, and the dinner will take place at 8 o'clock. The program is now under preparation and as it is desired to place thereon the names of all those who participate, it is necessary that applications for seats be promptly forwarded to Frank F. Schimpf, 68 Washington Ave., Albany, N. Y., chairman of the committee of arrangements. The assessment has been fixed at $6, which should accompany each order for seat at the dinner. The committee of arrangements consists of the following gentlemen: Frank F. Schimpf, chairman; James H. Doody, secretary; James J. Gorman, Albion J. Eckert, T. E. Kedwin, Fred W. Ridgway, John E. Dugan and Thomas F. Nolan.

CONVENTION DATES.

January 17 and 18, 1911.—The 17th annual meeting of the Wisconsin Master Plumbers' Association, at Green Bay, Wis. The officers of the association are: President, George F. Reeke, Green Bay, Wis.; vice-president, Louis Sonntag, Sheboygan, Wis.; secretary, P. H. Ryan, Appleton, Wis.; treasurer, Fred E. Green, Janesville, Wis.

January 17, 18 and 19, 1911.—The 21st annual meeting of the Iowa Master Plumbers' Association, at Waterloo, Ia. The board of directors will meet January 16th in the same city. The officers of the association are: President, J. F. Garvey, Mason City, Ia.; vice-president, C. G. Bosch, Burlington, Ia.; treasurer, J. F. Gearen, Sioux City, Ia.; secretary, H. B. McCarten, Dubuque, Ia.; organizing secretary, J. A. Farrell, Des Moines, Iowa.

January 24, 25 and 26, 1911.—The 17th annual meeting of the American Society of Heating and Ventilating Engineers, in the Engineering Societies' Building, New York City. The officers of the society are: President, J. D. Hoffman, Purdue University, Lafayette, Ind.; first vice-president, R. P. Bolton, New York City; second vice-president, S. R. Lewis, Chicago; treasurer, U. G. Scollay, New York City; secretary, Wm. M. Mackay, 113 Beekman St., New York City.

January 25 and 26, 1911.—The 19th annual meeting of the Illinois Master Plumbers' Association, at Springfield, Ill., with headquarters at the St. Nicholas hotel. The officers of the association are: President, Frank U. Patterson, Springfield, Ill.; first vice-president, W. J. Hilliard, Elmhurst, Ill.; second vice-president, C. D. Brownell, Champaign, Ill.; treasurer, Wm. Schlegel, Belleville, Ill.; secretary, W. C. Haviland, Aurora, Ill.

February 6, 7 and 8, 1911.—The sixth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, at Milwaukee, Wis. The officers of the society are: President, W. G. Williamson, Detroit, Mich.; first vice-president, Edw. F. Kane, Wilmington, Del.; second vice-president, C. I. Putts, Jr., Baltimore, Md.; secretary and treasurer, Thos. J. Claffy, 215 Madison St., Chicago.

February 14 and 15, 1911.—Annual meeting of the Ohio State Association of Master Plumbers, at Cleveland, O. The convention will be held in the Pythian Temple, and hotel headquarters will be established at the Gilsey House. The officers of the association are: President, R. H. Desormoux, 27 S. Fountain Ave., Springfield, O.; secretary-treasurer, Eb. Ellen, 4714 Central Ave., S. E., Cleveland, O.

February 14, 1911.—Annual convention of the Missouri State Association of Master Plumbers, in Kansas City, Mo. The headquarters of the convention has not yet been decided upon. The officers of the association are: President, Arthur McKinley, Kansas City, Mo.; first vice-president, R. P. Davidson, St. Joseph, Mo.; second vice-president, Edw. C. C. Reisel, St. Louis; treasurer, Jas. P. Carrol, St. Louis; secretary, Thos. P. Watts, Kansas City, Mo.; board of directors: Wm. Ryffel, St. Louis; I. N. McNeil, Sedalia, Mo.; E. C. Buchtel, Springfield, Mo.; Wm. Wormholz, Kansas City, Mo.

March 7 and 8, 1911.—The 23rd annual meeting of the New York State Association of Master Plumbers, at Rochester, N. Y. The sessions will be held at Powers Hotel, which will also be the headquarters of the convention. The officers of the association are: President, Frederick E. Fladd, Rochester; vice-president, John H. Moran, Albany; financial and recording secretary, Louis J. Yauchzi, 773 Lake Ave., Rochester, N. Y., treasurer, Chas. A. Campbell, Watertown, N. Y., national state vice-president, B. Joseph O'Donnell, Syracuse, N. Y.

Roughing-In Stacks and Branches—VI.

By Henry D. McCormack, C. E.

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The loop system of ventilation for a similar battery of closets is shown in Fig. 20. In this method of ventilation there are no branch vent pipes to the various closets or other fixtures; instead, the end of the main branch soil pipe is continued up above the top of the closet outlets, then back into the vent stack. Of course, if there were new fixtures on other floors, a separate vent stack would not be provided with this system, and the loop vent would be connected to the soil stack.

It might not be out of place here to state that a separate vent stack, either a continuation of the soil or

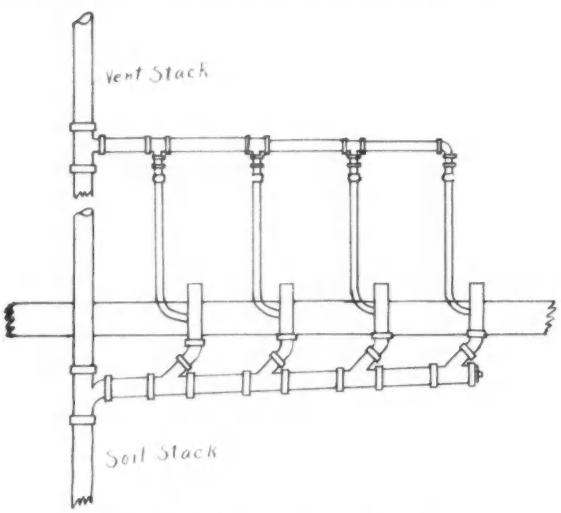

Fig. 20. The Loop-System of Ventilation.

waste pipe above the highest fixture, or a special vent stack accompanying the soil or waste pipe, should be extended to the open air above the roof; never, under any consideration, should a vent pipe or a vent stack from plumbing fixtures discharge into a light shaft, ventilation shaft or smoke flue.

Size of Fixture Branches.

Waste pipes from plumbing fixtures should always be large enough to freely carry off any water discharged into them and permit the fixtures being quickly emptied. On the other hand, they should not be so large that they will not be self-scouring. As a rule, the sizes of waste pipes in general use are sufficiently large for all purposes, if anything, being larger than is necessary. This is particularly true of branches to water-closets, which were given their size when the old pan-and-plunger closets, with large 4-inch outlets, and copious flushing chambers were in vogue. Modern closets, however, have much smaller outlets, averaging perhaps 2½ inches in diameter. On this account the present tendency is to use 3-inch soil connections for water-closets, and 3 inches may be given as the best size for the purpose. It should not be forgotten, however, that many cities have plumbing codes where the old size, 4 inches, is still required for soil outlets to water closets, and in such cities that size must be used.

Vent pipes are made much smaller than the accompanying soil pipes, and it is only in connection with waste pipes, 1½ inches and smaller in diameter, that vent pipes of equal size are used. Ordinarily for traps or bends, 3 to 4 inches in diameter, 2-inch vent pipes are used; with traps 2 inches in diameter, 1½-inch vent pipes are used, and with traps of smaller size, vent pipes of the full caliber of the traps are required. The sizes of soil, waste and vent pipes for various kinds of fixtures may be found in the following table:

Kind of Fixture.	Diameter of Soil or Waste Pipe.	Diameter of Vent Pipe.
Water closet	3 to 4 ins.	2 ins.
Slop sink	2 to 3 ins.	1½ to 2 ins.
Bath tub	1½ ins.	1½ ins.
Lavatories	1¼ to 1½ ins.	1¼ to 1½ ins.
Bidets	1½ ins.	1½ ins.
Shower baths	1½ to 2 ins.	1½ ins.
Sitz baths	1½ ins.	1½ ins.
Kitchen and pantry sinks	1½ to 2 ins.	1½ ins.
Laundry trays	1½ ins.	1½ ins.
Urinals	1½ ins.	1½ ins.
Drinking fountains	1¼ ins.	1¼ ins.

The waste pipes from plumbing fixtures should be given a good fall to the main soil or waste stack, so that the waste water will have a good scouring velocity. Owing to the small sizes, they will require greater pitch to produce velocities equal to those of larger pipes with less fall.

Example of the One-Pipe System of Plumbing.

Heretofore all the systems of plumbing explained and illustrated have been on the two-pipe plan. There is another system, however, which is extensively used, and in which no vent pipes are provided. This system is known as a one-pipe plumbing system, and may be seen by a reference to Fig. 21. The groundwork for a one-pipe system of plumbing does not differ from the groundwork for a back-vent system or a loop system of plumbing. All three methods of installation coincide up to the point where the rising stacks of soil and waste pipes are located. On the one-pipe system of plumbing the soil and waste stacks extend straight up through the building, without any foot or top connections for a vent stack, for no vent stack is required with this system.

Waste and soil branches are taken off from the vertical stacks of soil and waste pipes, and are run with a good

rise to the fixtures where they terminate. There are no back vent or loop vent pipes used with the one-pipe system, otherwise the waste pipes are the same, both as to sizes, locations and materials.

With this system of plumbing non-siphon or refill traps are used, whereas common siphon traps are used with the

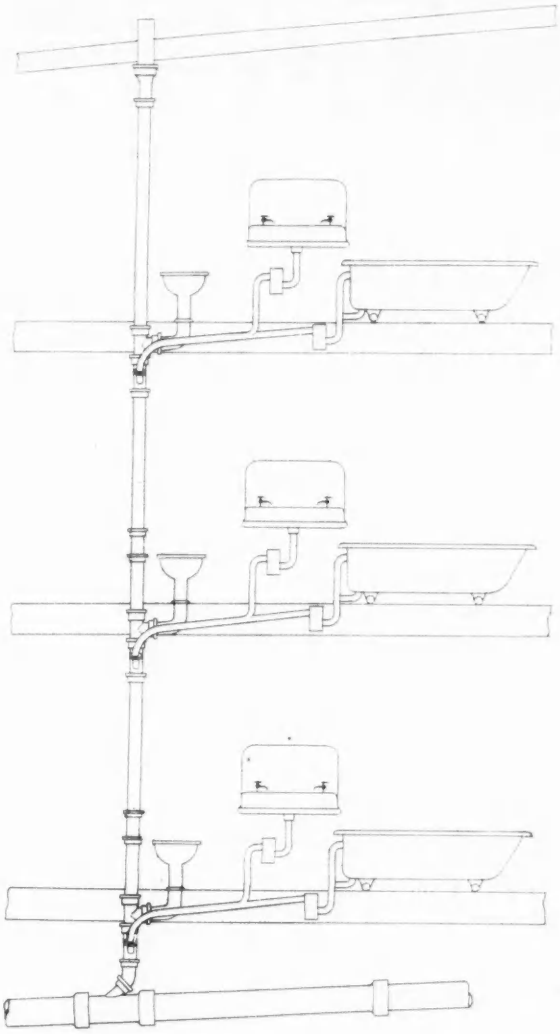

Fig. 21. Showing the One-Pipe Plumbing System.

other systems. There is this difference between the two cases, however; whereas non-siphon traps may be used in connection with the two-pipe system of plumbing, siphon traps cannot safely be used in connection with the one-pipe system of plumbing.

(To be continued.)

J. C. Reagan has opened an up-to-date pumbing establishment on Fourth street, Clinton, Ia.

The R. L. Bigger Plumbing & Heating Co., Amarillo, Tex., has been incorporated with a capital stock of $5,000. The incorporators are R. L. Bigger, Ben H. Stone and Ben Harrison.

The Carson-Payson Co., Dayton, O., has been awarded the contract for the installation of a heating and ventilating system in the new courthouse in Anaconda, Mont. consideration $62,268.

CONGRESS MAY CUT OUT LUXURY OF BATHING AT EXPENSE OF PUBLIC.

"Ought the servants of the people bathe, massage, and manicure themselves at public expense?" This is the question which, according to press reports, will be brought before the house of representatives in Washington at an early date.

Once more the house has regretfully and reluctantly thrust away the seductions of the plain tub, shower, Turkish, Russian, and other baths and the massaging and manicuring that go with the establishment maintained from public funds in the basement of the house office building. First it voted, as oft in the past, to discontinue appropriations for the hire of bathkeepers, rubbers, and finger nail polishers and to abandon the extensive suite of bathing chambers.

And then, incited by Republicans, who since Nov. 8 last have been growing daily more hostile to the enjoyment

McWhorter in "The St. Paul Dispatch."

A Plumber's Problem: How Can He Get This Large Bath-Tub Out of the Congressional Office Building?

(by the Democrats) of sybaritic luxuries, the house went a step farther and voted to sell the bathtubs and plumbing for junk and turn the proceeds back to the treasury.

All this is intended to take effect during the fiscal year ending June 30, 1912, which is the year in which the Democrats will assume control of the house of representatives. The Democrats started out to war upon extravagance and the Republicans thought they would lend them a helping hand. Representatives Mann and Madden of Chicago were the particular Republicans who conceived this charitable purpose. It was Congressman Madden who moved that all the language relating to the bathroom be stricken out of the bill and that the bathroom be closed. His proposal was adopted by a vote of 44 to 43, and immediately the house accepted a further amendment by Mr. Mann that the tubs and all the bathroom fittings be disposed of and the proceeds paid into the treasury.

The problem which faces the plumber, who gets the contract of removing the fixtures, should it come to this, is not an easy one if McWhorter of "The St. Paul (Minn.) Dispatch" has the right idea, as illustrated in the accompanying cartoon, since at least one of the bath-tubs seems to be of an extraordinary size.

The Ford Plumbing Co., Little Rock, Ark., has been incorporated with a capital of $5,000. The incorporators are W. M. Ford, R. L. Ford and W. J. Dillon.

The A. Deppman Co., Chicago, Ill., has been incorporated with a capital of $2,500 to conduct a plumbing and heating business. The incorporators are R. B. Whitney, Otto Lex and W. A. Parker.

THE METAL MARKET

CONTINUED DECLINE IN PIG-IRON PRODUCTION.

Blast-furnace returns for December show that the curtailment, which started in March and continued practically without interruption, was more drastic in December than almost any other month. The total output of coke and anthracite pig-iron during December was 1,774,000 tons. This compares with 2,635,000 tons in the corresponding month last year, and it is less than 35,000 tons than the output in December, 1908. Business during the week has been limited. There have been practically no changes in prices, although sales of Southern foundry continue to be made at $11.00 Birmingham. Even this price has been shaded on Tennessee iron for nearby deliveries. In New York some of the cast-iron pipe manufacturers are in the market for approximately 15,000 tons. A cut of 50 cents per ton has been made in the price of No. 2 Northern foundry in Chicago. Quotations are as follows:

No. 2 Southern foundry, Birmingham	$11.00 to $11.50
No. 1 Southern foundry, New York	15.50 to 15.75
No. 2X Northern foundry, New York	15.00 to 15.25
No. 2 plain, Northern foundry, New York	14.50 to 14.75
No. 2 Northern foundry, Chicago	15.50 to 16.00

COPPER.

With the publication of the annual reviews of all markets, which were made by the leading financial dailies, particular attention has been given to the depressed state of the copper market. For three years now, copper has been selling at 14 cents and under, save for a momentary spurt, so to speak, in the latter part of 1908 and 1909. This is not so unusual for a parallel case is found in the years 1902 to 1904. Then copper was selling at the low figures now ruling, and for about a three year's period prices fluctuated within narrow limits between 12 and 15 cents. During the early part of 1905, however, consumers bought largely, but immense stocks of copper were quickly absorbed and during the following two years the price of copper soared to new high levels, comparatively speaking. It may be well for manufacturers and large consumers to stop and consider whether they are not using more copper than ever before and, if they are, whether other consumers are not likely to be doing the same. It would not be surprising if during the latter half of this year the price of copper should advance moderately and perhaps sell at 15 cents or thereabouts. Present business is very quiet, sales of Lake being made at 13 cents and electrolytic at 12.75 cents.

LEAD.

The lead market is steady and the leading interest is asking 4.50 cents New York and 4.35 cents St. Louis. Outside sellers are obtaining a slight advance in the New York market.

PIG-TIN AGAIN HIGHER.

Sales of tin have been made this week at approximately 40 cents per lb. The blame for these high prices is laid at the door of the syndicate, but the compilations of the secretary of the New York Metal Exchange are worthy of note. He figures, and as a statistician his reputation is international, the visible supplies at the end of 1910 were nearly 4,000 tons less than at the end of 1909. This may not be the reason why tin is now selling 6 cents above the price of last year, but if tin supplies continue to decrease in a year of curtailment in manufacturing lines, what will happen when business is again normal?

SPELTER.

The Government report on spelter indicated that the production in 1910 was greater than in 1909 by 12,000 tons, and the consumption approximately 20,000 tons less. This is quite a little different from what the producers of spelter tried to make consumers believe in October and November. The demand is limited and prices are barely firm at 5.55 cents New York and 5.35 cents St. Louis.

OLD IRON.

The market in old iron continues dull. For New York deliveries prices are as follows:

No. 1 yard wrought, long	$10.50 to $11.00
No. 1 yard wrought, short	10.00 to 10.50
Heavy-melting steel-scrap	9.50 to 10.00
Machinery cast	11.50 to 12.00
Wrought pipes and tubes	9.50 to 10.00
Malleable castings	12.00 to 12.50
Wrought turnings	5.25 to 5.75
Cast borings	5.50 to 6.00
Stove plate	9.50 to 10.00
Light iron	5.00 to 5.50

PENNSYLVANIA JOTTINGS.

The Berwick Consolidated Gas Co., which has been in the hands of a receiver, has been purchased by George B. Atlee & Co., bankers, Philadelphia, for $125,000. The concern will be reorganized and put on a paying basis. The company controls exclusive rights to manufacture and sell gas in Berwick, West Berwick and Nescopek, Pa.

Adam Grander, founder of the Grander Stove Works, Royersford, died the past week, of heart failure, while sitting in an arm chair. He was 72 years of age.

The stove foundries of Spring City and Royersford report having had exceptionally good business the past year. The Grander Stove Works made 217 heats; the Buck-Walter Company 197, and the Floyd-Wells Company, 152.

Bids are being received for the construction of a sewer and water system at Masontown, Pa. C. U. Cloud is chairman of the Committee having the matter in charge.

The town of Yeadon, Pa., has employed A. F. Damon of Darby, as engineer to prepare the plans and specifications for the new sewer, and sewerage disposal plant, to be erected next spring.

Samuel H. Fridy has been elected treasurer of the Sutter Bros. Co., manufacturers of boilers, Pottstown. He was, for many years, secretary and treasurer of the Pottstown Electric Light Co.

The State Attorney-General has notified the municipality of Norristown, Pa., that it must at once take steps to construct a city sewage-disposal plant and cease poluting the Schuylkill river.

Frederick Broomall, aged 16, employed by Plumber M. D. Gould, of Norwood, was killed January 3rd by an explosion of asphaltum gas and oil. He is thought to have struck a match while drawing the oil from a barrel. Firemen found his body burned to a crisp. The plumbing shop was badly damaged by the fire.

The plumbing firm of A. E. Dahm and Ed. Keleher at Waupaca, Wis., has been dissolved by mutual consent, and it will in the future be conducted by Mr. Dahm with the assistance of his son, Julius Dahm. Mr. Keleher intends to open a plumbing business somewhere else.

A PRACTICAL MANUAL OF STEAM & HOT-WATER HEATING

BY EDWARD RICHMOND PIERCE

In this Section Mr. Pierce finishes the discussion of cast-iron boiler heating surfaces. Unquestionably the matter which Mr. Pierce has presented on boiler ratings is the ablest and clearest explanation of this all-important question ever printed in the English language. Mr. Pierce will now begin the discussion of hot-water heating. We promise you that more than one fitter will set up and take considerable notice of what will be said on this subject.

SECTION XXXV.

In case radiation of a greater condensing capacity is to be used, or that of a smaller value, the needed correction can easily be made by dividing the total B. t. u. transmitted per square foot per hour from the required heating surface, by the number of B. t. u. that the required radiating surface will condense per square foot per hour. Thus, if a pipe condensing 3 B. t. u. per degree of difference was to be used in a room which is to be kept at 70 deg. F., the total heat transmitted by the boiler heating surface at a given temperature would be divided by 450 B. t. u. in order to find the number of square feet of surface that one square foot of the heating surface would carry. As the boilers are all rated at 2-lb. pressure at the boiler, the utmost temperature that the steam could have in the radiators would be 220 deg. Then 220-70 = 150 deg. diff, 150 × 3 = 450 B. t. u. If this radiation was used, the fire-pot surface would carry 22 sq. ft.; the flue-surface according to its value. The absurdity of the popular notion that a very low stack-temperature is needed for best results is made quite manifest by this table.

Now let us examine the boilers A and B in the light of facts, instead of guess-work, and perhaps we can find out why the boiler with the big heating surface fell down in performance when put to the test of severe weather.

Boiler A was claimed to have 220 sq. ft. of heating surface, 30 ft. of which were in the fire-pot. Taking a fire-pot temperature of 1,200 deg. as the probable testing temperature, we find by Table K Z that a square foot of heating surface will transmit 10,000 B. t. u. per hour. Then, 10,000 × 30 = 300,000 B. t. u. that will be transmitted by the direct surface. The beginning of the flue-surface will have a temperature of 800 deg.; the temperature of the water, as it circulates, is 200 deg., the difference being 600 deg. The stack-temperature they claimed to be 220 deg. at the test. Therefore, the difference at that point would be 20 deg. and the average temperature of the flue-gases would be 510 deg. With the water, as it circulates, at 200 deg., the average difference of the water-temperature in the boiler and the average flue-temperature will be 310 deg. This means that the surface will transmit on an average 3.1 B. t. u. per degree of difference, or a total of 182,500 B. t. u. The total transmitted then is 482,500 B. t. u. It will not do to figure on the whole of this reaching the radiators, because many experiments have demonstrated that there is always a loss not accounted for at the radiators. This loss may be fairly fixed at about 15 per cent. Deducting this loss, which cannot reach the radiators or piping, and the total number of heat-units that can be relied upon to reach the radiators and piping attached to this boiler is 410,125 B. t. u. As one foot of standard cast-iron radiation has been generally accepted by the manufacturers of cast-iron boilers to emit 240 B. t. u. under the usual conditions of house-heating, we divide the 410,125 by 240, and find that the gross capacity of the boiler is for 1,708 sq. ft. cast-iron radiators.

The producer of this boiler called particular attention to his claim that his catalog-rating was only 80 per cent of the gross capacity. In order, then, to test the catalog-rating we must deduct the factor of safety that he claims. The net capacity of the boiler for catalog-purposes is in round numbers, 1,366 sq. ft. This being 16 sq. ft. more than the catalog calls for, we must conclude that the rating is correct and conservative, under the conditions named.

We will now examiner boiler B in the same manner. This boiler is claimed by the manufacturer to have the same size of grate as boiler A. The claim for total heating surface, however, is for an amount less than one-half that claimed for boiler A and very differently distributed. Boiler B is claimed to have 106 sq. ft. of total heating surface; 63 sq. ft. in the fire-pot surface, as direct surface; and 43 sq. ft. of flue-surface, which is indirect surface. Using the same temperatures that were taken by boiler A, we arrive at the following data: 63 sq. ft. transmitting 10,000 B. t. u. per ft. yields 630,000 B. t. u. The stack-temperature established by the producer, of boiler B, was 400 deg. Deduct the temperature of the water, as it circulates, or 200 deg., and we have the temperature-diffference at the stack-end of the flue-surface. The fire-pot end of the flue is, of course, the same as in boiler A, or 800 deg., the difference, 600 deg., being the same as in boiler A. The average difference of the temperature in boiler B flue-surface is 400 deg., yielding 4 B. t. u. per square foot of surface per degree of difference. The flue-surface of boiler B yields 43 × 4 × 400 = 68,800 B. t. u. per hour. The total B. t. u. transmitted = 698,800. The same loss, or unaccounted-for units by pipe and radiators, must always be deducted, viz., 15 per cent. There are then 593,980 B. t. u. available as the gross capacity of the boiler B. We must take the same factor of safety that we used for boiler A, or 20 per cent of the gross, leaving 80 per cent of the 2,478 sq. ft. gross capacity for the catalog-rating. The catalog-rating of boiler B is 1,950 sq. ft. Then, 80 per cent of 2,478 is 1,982. It is evident that boiler B is even more conservatively rated than the boiler A, when the fire-pot gases are at 1,200 deg. F.

It is certain that no house-owner will maintain a permanent temperature of 1,200 deg. in the fire-pot of his heating boiler, therefore an examination of these two

boilers at a lower fire-pot temperature may be of interest.

Suppose we take for the trial a rather moderate fire-pot temperature of about 900 deg. The temperature of the water, as it circulates, must remain the same, or at about 200 deg. The beginning of the flue-surface will be at about 2/3 of the fire-pot temperature, or at 600 deg. The stack-temperature of each boiler, we will assume, to be in perfect proportion with the fire-pot gases when at 1,200 deg., or 165 deg. for boiler A and 300 deg. for boiler B. The difference will be, for boiler A, 700 deg. for the fire-pot direct surface and 400 for the fire-box end of the flue-surface; but, at the stack-end of the flue, the temperature will be below that of the water as it circulates. The average temperature of the flue-surface of the boiler A, because of this, will not be above 382 deg., from which must be deducted the temperature of the water as it circulates, or 200 deg. So that the average difference will be 182 deg.

At this temperature, one average square foot of boiler A's flue-surface transmits 1.82 B. t. u. per degree of difference per hour. Applying this data to boiler A, we have the following: the 30 sq. ft. of direct surface at 700 deg. difference will transmit 147,000 B. t. u. (4,900 × 30 = 147,000—See Table K Z). The 190 sq. ft. of flue-surface will transmit 62,935 B. t. u. (1.82 × 182 = 331.24; 331.24 × 190 = 62,935). The total transmission is therefore 209,943 B. t. u. per hour. Fifteen per cent of this will not be accounted for through the piping and radiators, therefore we have for actual use 178,451 B. t. u. As each square foot of radiator is to emit 240 B. t. u. per square foot per hour, the boiler can only carry 743 sq. ft. gross, when a moderate fire is used.

Boiler B under the same conditions will show results from its surface as follows: The 63 sq. ft. direct surface will transmit 308,700 B. t. u. per hour. The 43 sq. ft. of flue-surface will transmit 26,875 B. t. u. per hour, a total of 335,575 B. t. u. per hour. Fifteen per cent of this is useless, therefore the gross transmission that is available is only 285,239 B. t. u., or enough to carry 1,188 sq. ft. It will be seen that the boiler A under a less powerful fire loses in a larger proportion than does boiler B.

It should be understood, however, that in the cases where the stack-temperature falls below that of the water as it circulates in the boiler, it is not usual to find the transmission from the flue-surface to be in equal proportion with the cases where the stack-temperature is above the temperature of the circulating water. The friction in the flue-surface and the cooling of the water at the stack-end of the flue often create conditions that reduce the value of the flue-surface greatly out of proportion to the figured transmission, and never, so far as I have observed, to the advantage of the boiler.

There is a tendency on the part of some manufacturers to rather overdo the matter of putting in a large quantity of direct heating surface and cutting down the flue-surface. The steam-fitter will find himself about as badly off in one case as in the other. The proportion of flue-surface to direct surface is one for experiment, to quite an extent, in all cast-iron boilers. It is reasonably certain, however, that any combination of surfaces, which results in having a direct surface more than double the flue-surface in square feet, will be difficult to control. While, on the other hand, a cast-iron boiler with a flue-surface more than double the direct surface will require a powerful draft to secure the required results.

This side of the question can be well illustrated by testing two boilers. Suppose one boiler to have 60 sq. ft. of direct surface and 30 sq. ft. of flue-surface. The other boiler to have 30 sq. ft. direct surface and 60 sq. ft. of flue-surface. Both boilers have 90 sq. ft. of heating surface, but the heating value of the two boilers, when tested with the gases in the fire-pot at 1,200 deg. F. and stack-temperature the same for each, say 400 deg., will be greatly different. The total transmission from the first one will be 648,000 B. t. u. per hour. From the second one 396,000 B. t. u. per hour. Deducting the 15 per cent loss, not accounted for from the piping and radiation, and the gross capacity of the first boiler for steam-rating is 2,295 sq. ft., and the gross capacity of the second boiler will be 1,402 sq. ft., a difference of over 61 per cent in the working out of two boilers, each having 90 sq. ft. of heating surface.

In the light of the facts disclosed in the discussions of the factor of combustion as shown in Tables G Z and H Z; the matter of fire-pot size as shown in Table I Z and its bearing on the time factor; the necessity of knowing the exact amount of direct heating surface, and the total amount of flue-surface as just shown by illustration; of what material value to the steam-fitter, to the engineer, to the house-owner, or to the student, are the various data in the ordinary catalog of cast iron boilers for house heating? If the manufacturers have seen fit to throw the burden of selection and garantee upon the steam-fitter or engineer, why should not the steam-fitter and engineer demand from the producers of boilers, the explicit information that these discussions have developed are necessary for them to have in order that they may make an intelligent choice of a boiler for the particular heating job they may have in hand?

The question of heating with hot water as the medium for distributing the heat instead of steam naturally comes up for discussion at this point.

There have been long arguments prepared by various authors to show the great superiority of water over steam as a heating medium. It is not my purpose to present an argument in terms either for or against either method.

It should not be overlooked by the trade, however, that when the manufacturers changed the basis of rating steam-boilers, and thereby changed the whole problem of steam-heating, that they at the same time changed the rating basis of the hot-water heating boiler and in so doing they spoiled many of the arguments as to the great superiority of water over steam as a heating medium, when each system is planned and executed by equally competent workmen.

With 2-lb. pressure at the boiler, we have seen that it is not to be expected that the temperature of the steam in the radiators will be above 208 deg. F. (See Tables F and F F. Section V. of this series, May 7th issue.) This is a temperature very easily produced in any open-tank hot-water job where the tank has an elevation of 15 ft. or more above the boiler. The production of the vacuum-valve and a regulator that will work promptly below atmospheric pressure have developed an entirely new condition in steam-heating that advocates of hot-water heating must very carefully contemplate before they advance the old stock arguments in regard to hot-water heating.

Under these changed conditions it will not be long before the great buying public will demand of the hot-water heating fraternity that it should give the promptness and certainty of action which is developed by steam working under less than atmospheric pressure in the hot-water jobs which they intend to install, and at the same time maintain a fuel-account not in excess of the steam-job as it is presented in a first-class steam-job working under pressure at, or below that of the atmosphere.

(To be continued.)

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NOTICE TO ADVERTISERS.

Copy and cuts for advertisements intended for a particular issue should reach the office of Domestic Engineering on Monday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Monday of the week of issue, but no proof can be shown.

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SPECIAL NOTICE TO READERS.

Our readers are invited to send in articles on any topics covering sanitary interests as outlined above. Photographs and drawings with descriptions of special interest to plumbers and steam-fitters are welcomed. "Domestic Engineering" pays at space rates for all articles, notes, criticisms and news data so contributed.

Among the Wholesalers

NELSON VALVE CO. VERY BUSY.

The Nelson Valve Co., Wyndmoor, near Chestnut Hill, Philadelphia, is very busy on large custom-trade orders and has employed additional hands in the coremaking department.

WILL REBUILD AT ONCE.

The Haynes-Thompson Plumbing and Heating Supply Co., Philadelphia, is completing arrangements for the rebuilding of its warehouse at 2107-2109 Vine St., in that city, which was destroyed by fire December 29th.

THE PERFECTION HEATER AND PURIFIER CO. INCORPORATED.

Articles of incorporation have been filed by the Perfection Heater & Purifier Co., Milwaukee, Wis. The company is capitalized at $10,000 with E. T. Ward, A. E. Ward and Henry A. Kirchner as the incorporators.

WILL MAKE VACUUM-CLEANING SYSTEMS.

The Vacuum Air-Cleaner Co., Philadelphia, incorporated January 4th under the Pennsylvania state law. It is capitalized at $10,000 and will manufacture and market machines for cleaning houses and mills via the vacuum system.

THE P. F. A. HOLDS 204TH MEETING.

At the 204th meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club Wednesday evening, January 4th, Mr. John Alexander, of the Harrison Safety Boiler Works, read a paper on "Machine Molding as Compared to Hand Molding." The old officers were re-elected and arrangements were completed for the trip to Boston. It was a jolly party that left January 10th for the Hub City on a special Pullman car.

HUMPHREY CO'S. SALESMEN'S ANNUAL MEETING.

Humphrey Co., Kalamazoo, Mich., held its annual salesmen's convention in that city the first week of the new year, at which all points in connection with the sale and use of gas water-heaters were thoroughly discussed. The convention closed with an elaborate banquet at the American hotel in Kalamazoo on Friday evening, January 6th. Those in attendance were: H. S. Humphrey, secretary and manager; Frank A. Lemke, assistant manager; and the following representatives: C. A. Simmons, T. E. Grant, Hal Cochran, Geo. B. Cross, J. P. Gates, W. E. Elder, L. E. Tremain, F. G. Harlan, Wm. J. McCartney, Frank A. Nolan, T. F. Andrews, Guy C. Andrews, F. R. Smith, W. W. Johnson and R. H. Nowlin.

ENTERTAINMENT FEATURES OF THE ANNUAL MEETING OF THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

The annual dinner of the American Society of Heating and Ventilating Engineers has been arranged for in the large dining room of the New Grand Hotel, Broadway and Thirty-first Street, New York, on Wednesday evening, January 25th, at 8:30 o'clock, provision being made for members, ladies and guests. On account of the limited seating accommodation, members should secure their dinner tickets as much in advance of the meeting as possible, as seats will be allotted in the order in which applications are received. Tickets can be procured from Secretary W. M. Mackay, P. O. Box 1818, New York City, the charge being $2.50 each. The New Grand is a modern hotel on the European plan, and as the dinner will be held there, and all can be accommodated, it will be convenient for the members to stop there, while the meeting room will be at the Engineering Societies Building, 29

West 39th Street. Secretary W. M. Mackay, will stop at this hotel, and a parlor will be provided for the use of the ladies. A general reception of members, ladies and guests will be held in the parlor of the New Grand from 7 to 8:30 oclock, Wednesday evening, January 25th.

ANOTHER STEP FORWARD IN THE "NACO" MOVEMENT.

Frank S. Hanley, secretary of the National Committee of Confederated Supply Associations, 261 Broadway, New York City, has just issued a special announcement concerning the "Naco" standardization of drawn-lead traps and bends, accompanied by tables giving dimensions, depths of seal and weights per running foot, as shown herewith. This marks another great step forward in the right direction for better and more sanitary plumbing.

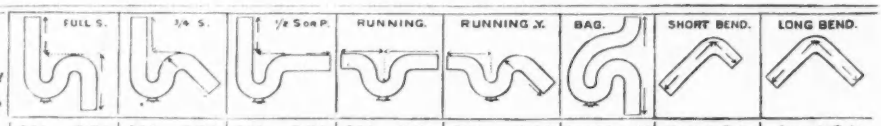
NACO STANDARD.

JANUARY 1911.

DRAWN LEAD TRAPS AND BENDS.

DIMENSION SCALE FOR NACO REGULAR TRAPS.

Showing length of inlet and outlet up to Running Y, length over all of Bag Trap and from center to ends of Long and Short Bends.



	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Length Over All	Center to Ends	Center to Ends
1¼-inch	4¼ inches	6 ¼	4¼ inches	5¼	4⅛ inches	6	4½ inches	5½	4½ inches	5¼	12 inches	6 inches	6 inches
1½ "	4½ "	7 ⅝	4½ "	6	4⅛ "	7	5⅛ "	6⅛	5¼ "	6	13⅜ "	7 "	7 "
2 "	4½ "	8 ½	4½ "	7½	4⅛ "	8	5⅛ "	7⅛	5¼ "	7⅜	15⅝ "	7¾ "	7¾ "
3 "	4 "	10⅝	4 "	10	4 "	9⅛	7⅛ "	7⅛	7½ "	10	18½ "	8¼ "	8¼ "
4 "	3¼ "	11⅝	3¼ "	11	3¼ "	10	8 "	8	8 "	11	22¾ "	10 "	10 "
4½ "	3½ "	12½	3½ "	13½	3½ "	10¼	9½ "	9½	9½ "	13⅜	23¼ "	11 "	11 "

DIMENSION SCALE FOR NACO EXTRA-LONG TRAPS.

Showing length over all of S and Bag Traps and inlet and outlet of ¼ S, ½ S, Running and Running Y.

Measurements taken as shown by arrows on cuts of Regular Traps	FULL S	¼ S	½ S, or P	RUNNING	RUNNING Y	BAG
	Length Over All	Inlet Outlet	Inlet Outlet	Inlet Outlet	Inlet Outlet	Length Over All
1¼ inch	24 inches	4⅛ inches 16⅛	4¼ inches 14⅛	4⅛ inches 17⅜	4⅛ inches 16⅛	24 inches
1½ "	24 "	4⅛ " 15⅜	4½ " 14	5⅛ " 16⅝	5⅛ " 15⅜	24 "
2 "	24 "	4¼ " 15⅝	4⅝ " 14	5⅛ " 16⅝	5⅛ " 15⅝	24 "

MINIMUM DEPTH OF SEAL ON ALL NACO STANDARD TRAPS IS 2 INCHES.

NACO STANDARD WEIGHT PER RUNNING FOOT.

		MEDIUM WEIGHT			HEAVY WEIGHT					
NACO REGULAR TRAPS.	WEIGHT OF LEAD PER RUNNING FOOT	2 lbs.	3 lbs.	4 lbs.	2½ lbs.	3½ lbs.	4½ lbs.	6 lbs.	8 lbs.	10 lbs.
		1¼"	1½"	2"	1¼	1½"	2"	3"	4"	4½"

		MEDIUM WEIGHT				HEAVY WEIGHT					
NACO REGULAR TRAPS VENTED.	WEIGHT OF LEAD PER RUNNING FOOT	2 lbs.	3 lbs.	4 lbs.		2½ lbs.	3½ lbs.	4½ lbs.		6 lbs.	8 lbs.
		1¼" with 1⅛" Vent	1½" with 1⅜" Vent	2" with 1½ Vent	2" with 2" Vent	1¼" with 1¼" Vent	1½" with 1½" Vent	2" with 1½" Vent	2" with 2" Vent	3" with 2" Vent	4" with 2" Vent

		MEDIUM WEIGHT					HEAVY WEIGHT					
NACO EXTRA-LONG TRAPS WITH AND WITHOUT VENT COUPLINGS.	WEIGHT OF LEAD PER RUNNING FOOT	2 lbs.	3 lbs.	4 lbs.			2½ lbs.	3½ lbs.	4½ lbs.		
		1¼"	1½"	2"			1¼"	1½"	2"		
		With 1¼" Vent	With 1½" Vent	With 1⅜" Vent	With 2" Vent		With 1¼ Vent	With 1½ Vent	With 1⅜ Vent	With 2" Vent	

In his announcement he says: "We are pleased to advise that the National Lead Co., 111 Broadway, New York City, has been authorized to use the trade-mark "Naco" on medium and extra heavy lead traps and bends of uniform depth of seal of 2 in., in conformity with specifications adopted by the Standards committee of the National Committee. These goods can be secured from any of their branches and warehouses."

Wm. B. Scaife & Sons Co., Pittsburgh, Pa., has been granted the privilege of using the "Naco" trade-mark, and will manufacture goods in conformity with the specification adopted by the Standards Committee.

Up to the present time the following manufacturers of galvanized range-boilers have been authorized to use the "Naco" trade-mark:

Brooklyn Range Boiler Co., Long Island City, N. Y.
Detroit Range Boiler Co., Detroit, Mich.
L. O. Koven & Bro., New York, N. Y.
Wm. B. Scaife & Sons Co., Pittsburgh, Pa.

The "Naco" movement is steadily gaining recruits all over the country, and the outlook for the general standardization of plumbing material is extremely good

There are many ways in which the jobber can further this movement. A prominent New York State jobber has recently had printed on reprints from "Domestic Engineering" substantially the following advertisement:

If you agree with and endorse the policy of the "Naco" movement for honesty of weight, sizes and quality, and you believe in the reliablity of material as the sentiment expressed in the cartoons of "Domestic Enineering," then the house of ..... is worthy of your due consideration.

BAY STATE BRASS CO.'S PLANT SOLD AT PUBLIC AUCTION.

The plant of the Bay State Brass Co., at Haydenville, Mass., has been sold at public auction to satisfy the claims of the creditors. It was purchased by H. J. B. Willis, of New York, representing himself and other creditors, for $22,700. The auctioneer first received offers for the plant as a whole and then considered bids for the property, merchandise and other lots in connection with the business. The bid of Mr. Willis for the entire plant was the largest and also exceeded the total of the bids on the divisions and the property was awarded to him. He stated after the sale that operations would be resumed within a short time.

STANDARD MANUFACTURING CO.'S ANNUAL DINNER.

On January 5th, 1911, thirty men, heads of departments, salesmen, etc., all of the Standard Mfg. Co., Pittsburg, held their fourth annual dinner in the Dutch room at the Fort Pitt Hotel, in that city. The evening was spent socially and in reviewing the past year, as well as discussing plans for a successful campaign during 1911.

One of the most pleasant features of the evening was when Mr. F. J. Raymond, of St. Louis, Mo., was introduced and for one hour entertained the guests. His subject covered the wide question of "Business-Getting and Dollar-Making."

The Standard Mfg. Co.'s forces are so organized that for years these business meetings have been recognized as a great help in promoting that spirit which results in overcoming all obstacles and giving the customer the best dollar's worth.

On January 6th the entire party visited the New Brighton plant of the Standard Sanitary Manufacturing Co. Automobiles met the party at the railroad station and on the arrival at the plant a thorough inspection of it was begun, lasting several hours. A luncheon at 1 p. m. and a continued inspection of the plant concluded the day, and all left the plant better informed than they were before. The men who were present are: R. C. Turner, J. E. Tatem, H. H. Krey, C. J. Wood, Jr., J. D. Burgess, G. H. Rankin, E. J. Waldman, W. Goodman, R. E. Donoghue, L. P. Ertel, F. S. Kaulback, C. F. Domhoff, Baird Reed, W. N. Walcutt, J. F. Getty, Dave Mathews, J. Shoemaker, E. McMahon, J. McDonough, P. Glackin and others. George W. Ryan, secretary of the company, is authority for the statement that already there are indications that 1911 will prove a very successful year, and that meetings of this kind are a very necessary item in the affairs of every successful modern concern.

PERSONAL MENTION.

Harry W. McVea, formerly plumbing inspector at Omaha, Neb., has gone to Boise, Idaho, to superintend the installation of an up-to-date plumbing system in a new office building in that city. If the outlook proves favorable Mr. McVea will probably locate permanently in that part of the country.

The Plumbers Woodwork Co., Algoma, Wis., announces the appointment of H. P. McKay as its traveling representative. Mr. McKay has been in this company's service for the past three years, is well-posted in plumbing matters and has a large acquaintance in the plumbing trade and it is consequently expected that he will be very successful on the road. He will call on jobbers in plumbing supplies.

William F. Rutter, a retired master plumber and steamfitter, at Lawrence, Mass., celebrated his 50th wedding anniversary at his home on East Haverhill street in that city on December 28th. Mr. Rutter was in the plumbing and steamfitting business in Lawrence for 39 years. He served 13 consecutive terms in the legislature and was one of the most prominent residents of the city. He was president of the Broadway Savings Bank, a director of the Merchants National Bank, and an officer in other corporations. Mr. Rutter was born in Cambridge, Mass., August 31, 1836. He came to Lawrence in 1858. His wife was Miss Anna M. Turner, of Ellsworth, Me. Both are enjoying the best of health.

STEAM-HEATING APPLIANCES IN TRANSVAAL, SOUTH AFRICA.

In answer to an inquiry from a manufacturer of steam specialties used on steam and hot-water radiators or on different heating appliances in Transvaal, South Africa, U. S. Consul Edwin N. Gunsaulus, Johannesburg, reports that there is only one engineer in Johannesburg who makes a specialty of installing such apparatus and he has all the large contracts for such installations. In this connection it may be stated that practically all heating appliances not only here but in all South Africa are of British manufacture, but that despite this monopoly there is no reason why American manufacturers should not enter the field. The engineer referred to has become interested in this phase of the trade and desires the lowest American prices on ½-in., 1-in. and 1¼-in. radiator valves, and a sample of the valves, if possible. Only about half the buildings in Johannesburg have heating systems, owing to the mildness of the climate, but there is a tendency to install them in the majority of the newest and best buildings, and there are now in course of erection many buildings, public and private, in which such installations will take place. [The address of the engineer referred to is on file in the Bureau of Manufactures at Washington, D. C.]

BOILERS, FURNACES AND RANGES.

There never was a time in trade history when so much thought was concentrated in supplying plumbers and steam-fitters with the information they need to conduct their business satisfactorily. This is true in a particular degree when considering the thousands of leaflets, pamphlets, booklets and catalogs issued by our advertisers for the purpose of educating and informing our readers as to the merits and uses of the products they manufacture. These different specimens of trade craftsmenship are furnished in all sizes. The Boynton Furnace Co., 106 W. 37th St., New York City, is issuing to the trade a series of vest-pocket booklets which will commend themselves readily to the practical man in the trade, because of their handy size and the useful character of the information contained therein. It should also be noticed that the company had the good sense to give these booklets round corners which contributes considerably to the life and appearance of a booklet when in actual use. Three of the booklets have just been issued; one on square-pot boilers, another on "Newport" ranges, and the third on square-pot furnaces.

The square-pot boiler catalog is No. 83 and describes these well-known Boynton boilers, which are designed for low-pressure steam and hot-water heating. Catalog No. 62 deals with the "Newport" ranges and embodies, in a concentrated form, the experience of 61 years in making of ranges. Warm-air furnaces and combination furnaces are given in catalog No. 72. All these booklets are full of useful information in convenient and accessible form, and plumbers and steam-fitters can obtain the trio upon request. They are well worth while. When you write for them, mention "Domestic Engineering."

THE COCHRANE STEAM-STACK AND CUT-OUT VALVE HEATER AND RECEIVER.

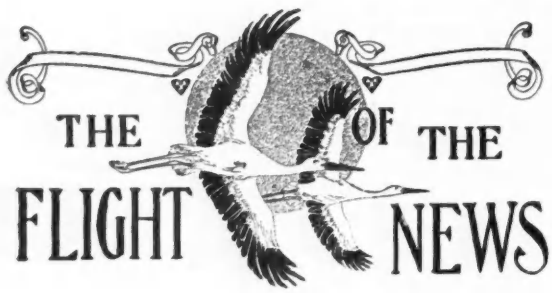
An interesting and valuable device for the protection of heating systems and boilers from oil, a provision for the reception of condensed returns and for supplementing the return with raw water, is the Cochrane steam-stack and cut-out valve heater and receiver. This heater is designed to take the place of the ordinary feed-water heater, an independent oil separator, the make-up water regulator and the hot well. Furthermore, it heats the boiler feed-water to approximately 210 deg. Fahrenheit.

Forming a part of the heater and attached to it, the Cochrane oil separator extracts the oil from the exhaust steam delivered by the engine and pumps. After purification, as much steam as is necessary enters the heater for heating the feed-water, the surplus passing either to the heating system or to the atmosphere. The trap draining the separator also takes care of the overflow from the water. The heater is easily accessible for inspection or cleaning, it being accomplished by levers to close communication between either the trap and the heater or the separator and heater at will.

In the valve construction, the gearing is so arranged that where the exhaust-port valves are large, the smaller valve opens before and closes after the large valve, thus acting as a pilot and relieving the larger valve of unbalanced steam-pressure.

A complete description of this heater and receiver and its application can be obtained upon request from the manufacturers, the Harrison Safety Boiler Works, 3153 N. 17th St., Philadelphia, Pa. Among other interesting illustrations in the catalog is the cross section of the surplus-exhaust separator and trap attached to the Cochrane heater and receiver, showing the cut-out valves and course of steam and water. When writing for this catalog, ask for catalog "77-E."

Fred Domeyer and C. A. Hess, Mandan, N. D., have consolidated their plumbing establishments in that city under the name of the Mandan Plumbing & Heating Co.



NEW YORK NEWS.

Cold weather has both benefitted and adversely affected trade in plumbing and steamfitting circles. Work at dwelling and building operations has been held back and, on the contrary, calls for repair work, fixing frozen pipes, etc., have been unusually brisk, so that plumbers have had little let-up in business since Christmas. There is a seasonable lull in business in supply house circles, although preliminary work upon early spring orders has been commenced by many of the supply men. Collections are fair, but not quite satisfactory.

A public comfort station is to be erected by the city in McKinley Park, Brooklyn. Bids for its erection are being received.

The boiler house plant of the Fredonia (N. Y.) Steam Heating Co., which was destroyed by an explosion December 15th, is to be rebuilt at once and new machinery and equipment will be installed.

A new twelve-story brick office and loft building is to be erected for the use of the Consolidated Gas Co. at Irving Place and Fifteenth Street. Its estimated cost is $500,000.

At the recent fearful catastrophe at the New York Central Railroad's gas plant, Plumber George Davis, of 570 Amsterdam Ave., was among the injured. At the Hudson Street Hospital he is gradually getting better.

Henry S. Thompson, Commissioner of Water Supply, Gas and Electricity, recently ordered employes in these departments to wear a uniform. H. J. Smith has brought suit in the Supreme Court to test the Commissioner's right to promulgate such an order. Mr. Smith is an employe, mainly engaged in ferreting out "crooked work," and he says the wearing of a uniform would render his work almost impossible.

A ruling of importance to contracting plumbers, steamfitters, etc., was made the past week by Supreme Court Justice Page in the injunction case of the Park Place Restaurant vs. a prominent builder. The restaurant company asked the court to enjoin the builder from using the sidewalks while a skyscraper was in course of erection. "The occupancy of sidewalks is a necessary incident to erecting new buildings," was the substance of the court's decision.

The Richmond Sales Co., 103 Park Ave., is increasing its advertising of vacuum cleaners and counts upon a large increase of orders for 1911. Several additional sales offices in various cities are to be opened in the near future.

The Schwartz Plumbing Co., 88 Centre Street, suffered a small loss by fire, but it in no way interfered with regular business.

A man, supposed to be demented, entered the office of the Paul Schaad Co., plumbing supplies, etc., 26 Cliff Street, December 28, and, finding Ada Piers, aged 18, the bookkeeper, alone, demanded money. The miscreant finally attacked her, bound and gagged her and secured $8 cash. She saved $60 by managing to throw it under a desk. The thief then set fire to some cotton waste and made off and so far has not been apprehended. The fortunate return of Mr. Paul Schaad and others saved the building from fire and released the plucky bookkeeper from a painful situation. The robbery was unusually bold and created a decided sensation.

L. A. Malkiel, of Yonkers, calls attention to the fact that water in Yonkers costs householders and manufacturers at the ratio of 15 to 6, while the city pays 9 cents for the same quantity. The householders, Mr. Malkiel avers, are paying for one-third of the water used by "favored sons of the city," and he objects to such arrangement.

William A. Clark, former U. S. Senator from Montana, is "moving in" to his new $7,000,000 residence at Fifth Avenue and Seventy-second Street. There are 121 rooms and 31 baths in the house and no building in the world, experts say, carries in its construction so much bronze. There are plenty of bronze lighting fixtures, bathroom appliances and plumbing. Senator Clark practically owns the Henry Barnard Bronze Co., which has a large plant in the suburbs, and which has cast some of the finest bronze standards, electroliers, etc., ever made in this country.

Secretary W. M. Mackay is completing arrangements for the annual convention of the American Society of Heating and Ventilating Engineers, to be held in New York, January 24th, 25th and 26th. A good attendance and good papers are assured.

Charles E. Bedford and associates have incorporated the Grieve Grate Co. It is capitalized at $100,000 and will manufacture stove, range and heater supplies.

NEWS FROM PHILADELPHIA.

City-Treasurer Murrell Dobbins, who is president of the Camden Pottery Co., Camden, N. J., is prominently mentioned for the nomination of mayor of Philadelphia at next spring's election. He says he does not consider himself a candidate.

Contracts for heating and plumbing work were closed the past week as follows: R. S. Heckler, at 1848 North Fourth St., cost $290. H. F. Meyer, at 250 South Tenth St., $175. Joseph Mandel, at 710 Passyunk Ave., $300.

The Lawrence Gas Fixture Co. has leased the entire store building at 1727 Chestnut St., and will occupy it in the near future. At present they are located at 129 North Twelfth St.

The United Gas Improvement Co. has declared its usual quarterly dividend of 2 per cent. payable January 14th.

At least one Philadelphian is said to be interested in the Welkom Warner Manufacturing Co., of Newark, N. J., which incorporated last week, with a capitalization of $20,000. They intend to manufacture a device designed to be heated by carbon fuel, for heating dwellings, buildings, etc.

NEW JERSEY JOTTINGS.

In his annual message to the City Council, January 2d, Mayor Charles Ellis (re-elected) recommended an auxiliary water system for mill and fire purposes for the city; recommended that steps be taken towards erecting a sewage-disposal plant in compliance with the State law which orders that cities build such plants by 1913 in order to leave rivers free from pollution. Council will act favorably in the matters named.

The new Council of Bordentown, N. J., appointed John H. Hutchison sewer-commissioner.

Haddonfield, N. J., Borough Council January 2d, appointed J. Morris Roberts, supervisor of streets and sewers and George Thompson engineer of the water-works.

Employers of the Welsbach Co., manufacturers of gas mantles, lamps, etc., Gloucester City, N. J., were given a ten days' holiday at Christmas.

Mayor Stoy, of Atlantic City, has vetoed the council's ordinance authorizing the issuance of bonds for the erection of lighting standards costing each $116 along the famous ocean Boardwalk. His Honor considers the cost of the standards to be too high. Council threatens to pass the ordinance over his veto.

The New Jersey Gas Co. has commenced construction work upon its large gas holder and plant at Glassboro.

Gibbsboro residents have practically decided to erect a municipal lighting plant. A committee of the Gibbsboro Improvement Association has the matter in charge. The town is the seat of the large paint and varnish plant of John Lucas & Co., of Philadelphia, and many well-to-do people have homes there.

A contract for a $831,000 conduit system was executed December 21st at Atlantic City between the municipality and William G. Root, of New York city, the successful bidder for the work. The main conduit is to run under Baltic avenue for two miles. Work will start soon, the weather permitting. The object of the system is to drain

Atlantic City, which lies on an island. For years residents have had to deal with water in their cellars, etc., and the new drainage system will, it is believed, obviate such nuisance. An immense amount of material will be needed in building the so-called "drainage canal." Another improvement Atlantic City has started is the better lighting of its famed Boardwalk, which runs for seven or more miles along the ocean front. Poles and overhead wires are being discarded and the plan of lighting through standards placed on the outer edge of the Boardwalk is being consummated.

Merchantville residents will soon be drinking good water, the new water-works, erected by a private company having been completed and house connections being in order. Water metres will be installed in consumers' homes, business places, etc.

Warne S. Smith will soon build a plumbing shop at Medford.

Camden City Council has not yet appointed a successor to the late Robert Hollingsworth, chief of the Water Bureau. Strong influence is being brought to bear in favor of the appointment of Assistant Chief Hertline, but council believes that hereafter a graduate engineer should be chief. P. M. Hanley, a civil engineer of Kansas City, has formally filed his application for the position and it would seem somebody had given him "a tip" that he could get the place.

OBITUARY.

Charles Kostlevy Dead.

Charles Kostlevy, one of Chicago's pioneer master plumbers, died at his home in this city at 2 o'clock Saturday afternoon, January 7th, in his 74th year, after a short illness. Mr. Kostlevy was born in Austria in 1837 and came to this country and to Chicago with his parents

The Late Chas. Kostlevy, Chicago.

in 1848. After having finished his school education he learned the plumbing trade and opened a plumbing establishment at Kinzie and Wells streets in 1862 under the firm name of Kostlevy & Brown. In 1864 he purchased his partner's interest in the business and conducted it thereafter under his own name until the time of his death, during the last years with the assistance of his second oldest son, Joseph Kostlevy. He was a charter member of the old and original Chicago Master Plumbers' Association, which was organized in 1864. When his plumbing establishment was destroyed in the great Chicago Fire, he opened a new establishment on the West Side which he soon after moved to its present location, 812 West 18th St. He is survived by four sons and four daughters. Three of his sons are connected with their father's plumbing business, while the oldest son, Chas. A. Kostlevy, is a member of the successful plumbing and heating firm of F. M. Stearns & Co., at Jamestown, N. Y., which is also known as the manufacturer of several high-grade plumbing specialties.

Edgar M. Joralemon Passes Away.

Edgar Monroe Joralemon, proprietor of the Celluvarnio Co., 44 East Kinney St., Newark, N. J., died at his home in that city on Tuesday, January 4th, in his 54th year. He was born in Newark, on February 15, 1857, and received his education in the local schools. He spent his entire life in his native city and was for 25 years connected with the Celluloid Co. there, and it was while he was still in its service that he conceived the idea of covering water-closet seats and tanks with celluloid. In 1899 he patented his invention and started in a small way to put his idea into practice with the result that the demand for his products soon increased to such an extent that he had to open a factory of his own for their manufacture. It is announced that the business of the Celluvarnio Co. will be continued without interruption.

Roswell K. Peck, a member of the plumbing firm of Peck Bros., Montpelier, Vt., was killed on New Year's day on an elevator in his place of business. He was alone at the time and was dead when he was discovered by his brother John W. Peck. Mr. Peck was subject to indigestion and it is believed that he was seized with a dizzy spell, due to a sudden attack, and collapsed on the elevator, his head striking the upper part of the door frame as the elevator ascended. His skull was fractured. He was in his 61st year.

MILWAUKEE AND WISCONSIN NEWS.

The suit of the state of Wisconsin against the so-called plumbers' trust in which the Milwaukee Master Plumbers' Association, its officers, the Wisconsin Master Plumbers' Association and the National Association of Master Plumbers of the United States were made the defendants, and the F. R. Dengel Manufacturing Co., a co-defendant, has been dismissed on stipulation in the Milwaukee county circuit court. In the complaint it was alleged that the three organizations formed an unlawful combination in restraint of trade, that prices were regulated, and that the natural laws of trade were circumvented.

J. J. Power, Madison, Wis., has perfected an invention which will revolutionize ventilating and vacuum-cleaning systems, according to reports. The device consists of a small motor, a tube and a fan. It is through the design of this fan that the machine derives its power, it being cone-shaped and not like the ordinary fan.

According to news received by City Engineer Poetsch of Milwaukee, the council's special sewerage commission is in session at Boston, Mass., and is preparing a final report. A preliminary report was made about two months ago. J. W. Alvord, Chicago; Harrison P. Eddy, Boston, and George W. Whipple, New York, constitute the commission.

EIGHT BATHROOMS IN ONE-FLAT IS NO IDLE TALE.

The Senator from New York, Elihu Root, has just leased a flat which will have eight bathrooms. That is not the only peculiar thing about it; for fear some of his constituents should think he was not living up to the dignity of his office let it be known that this flat is no ordinary domicile. It contains twenty-two other rooms besides the baths; has an area of 2,500 sq. ft. available for entertaining in four rooms alone. It will not be a cheap apartment either for the Senator will pay about $25,000 for a single year's residence. The apartment house has been described as an apartment house for millionaires. It is now in course of construction on the site purchased by August Belmont some time ago for a residence at Fifth avenue and 81st street.

PACIFIC COAST LETTER

Building operations are going forward without interruption in San Francisco as a result of the unusual weather that is being experienced here at the present time. The rains that have fallen to date have been very light and are far below the normal allowing of almost uninterrupted operations in the guilding line, something very seldom experienced here so late in the season. Builders are taking advantage of the splendid conditions and work is being rushed on structures that were planned for next spring. Work on office and store-structures downtown is going forward at a rapid rate and the plumbing trade is as busy at the present time as it was last summer, when the season was supposed to be at its height. The announcement that the Panama-Pacific International exposition-proposition will be denfiitely settled about the middle of January was received with a great deal of satisfaction, and in case this city is selected as a site for the Fair a great deal of work will be commenced at once. Some very extensive hotel-plans depend upon this matter and there is no doubt but that its settlement will mean a great difference in the local building world. If San Francisco is named as the Exposition City work will also be commenced at once on the erection of exposition buildings and this will mean a great deal of plumbing work for the sanitation of such buildings as will be erected here will be no small matter. The year just closed has not been an especially active one in the building line, but the coming one promises to be highly satisfactory and reports are coming from architects that they now have more work on their boards than has been the case in many months past. There has been much work of a municipal character done during the past year and there is still a large amount of this on hand. Plans are now being made for the erection of a permanent city hall, and the prospects are that it will not be very long until work is commenced on this. In the meantime the various departments are to be housed in a temporary city hall now in course of construction on Market street, near Eighth. The contracts for the plumbing and heating of this structure will be let within a short time.

Active work on the Lowell high-school building is being interfered with on account of the fact that some of the bids were too high and the building could not be constructed with the funds available. New bids are being invited and will be opened again shortly. The bids on the plumbing and the vacuum-cleaning plant were considered satisfactory, however, and were accepted. V. J. Belknap secured the former on his bid of $13,891 and the Pacific States Sales Co., located on Front street, was awarded the contract for installing the cleaning system for $985. Bids for installing the plumbing systems in a number of other schools are also being invited and the outlook is that there will be as much work of this character done during 1911 as in 1910.

Gradually the plumbing-supply houses are getting downtown into the wholesale district, although there are a number of small firms still located far out on Market street and on McAllister street. The announcement is now made that F. E. O'Hair & Co. have secured a location on Mission street and will move from the present quarters within a short time.

Edmund Grundy, San Francisco, has been awarded the contract for installing the plumbing system in the building being erected by Ruth Merrill Hammond on Broadway, near Broderick.

J. E. O'Mara, San Francisco, has just secured a contract for installing the plumbing in the six-story building being erected by Morris Herzstein at Sutter and Jones streets.

The Morris Stulsaft Co. San Francisco, has just secured the contract for installing the plumbing and water piping in a garage building being erected by Mrs. Philomen Clarke at her residence on Presidio terrace.

The William F. Wilson Co., San Francisco, has been awarded the contract for installing the plumbing system in the nine-story structure being erected by the St. Francis Beatty Co., at Turk and Mason streets. The heating system in this structure will be installed by the John G. Sutten Co.

J. C. Hurley, San Francisco, has been awarded the contract for installing a hot-water heating system in the building of the Sisters of the Presentation at Turk street and Masonic avenue. The value of this contract is placed at $3,035.

Frank J. Klimm, the San Francisco master plumber who for the past year has been a member of the Board of Health of San Francisco, has been re-appointed to this position.

The J. L. Bowen & Son Co., San Francisco, will shortly commence work on the plumbing, gas-fitting and sewering in the four-story building being erected by the Julian Investment Co. on Hyde street, near O'Farrell. This contract is valued at $2,345.

The Otto Kurtz Co., San Francisco, has been awarded the contract for installing the plumbing, water-service and gas-piping for future steam-heating system in a three-story building being erected by Mrs. Marie Pinet on Post street near Taylor, the consideration mentioned being $1,500.

Francis J. Baker, of the George H. Fay Co., recently returned from a short business trip to Los Angeles, where he visited the southern wholesale establishment. This concern now has its new store in Oakland in operation, this having been opened sooner than was thought possible when the lease on the property was secured.

Some large shipments of pipe are being made to the oil fields by San Francisco concerns to be used for the distribution of natural gas. At first only towns in the oil district will be furnished with gas by the companies now engaged in this work, but it is planned later to pipe gas to Los Angeles and to San Francisco.

The contract for the alterations in the plumbing system at the Abbotsford Inn at Los Angeles has been awarded to J. Rosye, in that city, on his bid of $2,460.

A recent incorporation of note is that of the D. R. Campbell Plumbing Company, a prominent San Francisco firm. The capital stock of this concern has been placed at $10,000, with the following as interested parties: D. R. Campbell, E. J. O'Boyle and C. H. Sullivan.

The John G. Sutton Co., San Francisco, has just been awarded the contract for the installation of the heating and ventilating systems in the Phoebe A. Hearst building, at Market and Third streets, and will commence work on this at once. In installing this work provisions are to be made for a future extension of the system, for although only 12 stories are to be erected at the present time, provisions have been made for fourteen additional ones. The contract is valued at $24,000.

Frank J. Klimm, San Francisco, has been awarded the contract for installing the plumbing, gas-fitting and sewering in the Class C building being erected by S. Klarenmeyer, on Taylor street, near Eddy, the consideration being $3,650.

The Pacific Fire Extinguisher Co., a prominent factor in the San Francisco heating world, has just taken a lease on the building formerly occupied by the Risdon Iron Works, on Stuart street, near the water front, and will occupy this with its large shop in the near future.

The sanitary drinking-fountain idea becoming popular in San Francisco, a number of public fountains have been installed of late. Two were recently placed in the Ferry building at the foot of Market street and others will shortly be placed in other sections of the city.

H. T. Sherriff, representing Nye, The Die Man, on the coast, is at present in San Francisco, back from a trip through Southern California. He will shortly start on a trip through the Pacific Northwest. The Southern California territory has been thoroughly covered and for some time Mr. Sherriff has been making his headquarters at Los Angeles, where his family is at the present time.

Just prior to the close of 1910 a number of fairly large plumbing and heating contracts were awarded in San Francisco, materially increasing the record for the year. Winter work, owing to the splendid weather conditions that have been prevailing, has been quite heavy and a number of buildings are now in course of construction that were planned for spring. Less than three inches of rain has fallen here this season as against an average normal fall of about 12 in., and building is carried on as easily as in the summer time. While there will be a falling off in the number of office structures to be erected during 1911, a number of large buildings are being planned for the downtown district. Many of these structures are to be hotels and there will be great activity in this line as soon as it is definitely decided that this city will be named as the site for the Panama-Pacific International Exposition. This matter will be decided in about two weeks and it is anticipated that there will be a general revival in building then.

While the present weather conditions are very favorable for local building the long dry spell is seriously affecting business in the country districts and wholesalers of plumbing supplies are noting a falling off in trade as a result. For a long time conditions have been such that business has been better relatively in the country than it has been in the large cities of the coast, but this is scarcely true at the present time. The prospects of this being a dry year is already causing a curtailment of building operations in the farming districts of the state and the situation is commencing to grow serious.

H. W. Moffatt & Co., with offices in the Pacific building at Fourth and Market streets, San Francisco, have contracted to install the steam piping for work at the French hospital on Point Pobos avenue. The consideration mentioned is $3,500.

The Lenning-Rapple Engineering Co., San Francisco, will shortly commence work on the installation of a steam-heating system for the building being erected by the San Francisco Turn Verein on Sutter street, near Devisadero, and of the circulating pipes for the plunge tank. Some of the fuel-oil burning apparatus will also be installed.

The Smith-De Pence Hardware Co., of Santa Barbara, Cal., has opened a plumbing shop.

The Western Pipe & Steel Co., of California, has secured offices in the Board of Trade building now being completed in San Francisco and will occupy these as soon as the quarters can be made ready.

A QUEBEC PLUMBER'S ORDER.

The Province of Quebec is a large one, and the plumber in some of its small French towns is a jack-of-all-trades. He is a plumber, a tin-smith, a heating engineer (chiefly of stoves), a bicycle-repairer, and a fixer of wooden sidewalks, if need be. His chief interests in life are his religion, his large family, his excellent brand of wine, and the city of "Kebec." A shoe-dealer in the city of Quebec received the following quaint order from one of these plumbers.

"You will put some shoes on my little families like dis, and send them vary queeck by Sam Jemison, the carrier: One man, St. Jean (me), 42 year; one woman, Sophie St. Jean (she), 41 year; Hermedes and Lenore, 19 years; Honore, 18 year; Celina, 17 year; Narcisse, Octave and Phyllis, 15 year each; Olive, 14 years; Phillippe, 13 year; Alexander, 12 years; Rosina, 11 year; Bruno, 10 year; Pierre, 9 year; Eugene (we lose heem); Edouard and Eliza, 7 year each; Adrienne, 6 year; Camille, 5 year; Zoil, 4 year; Joseph, 3 year; Moise, 2 year; Muriel, 1 year; Hilaire (he go barefoot). How much?"

P. S.—Zenobie, she no come yet, so nevaire mind her.

The High Cost of Living.

A young lady who is teaching a class of small boys in Sunday school desired to impress on them the meaning of returning thanks before a meal. Turning to one of the class whose father was a deacon in the church, she asked him: "William, what is the first thing your father says when he sits down to the table?" "He says, 'Go slow with the butter, kids; it's forty cents a pound,'" replied the youngster.

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Government Proposals.

TREASURY DEPARTMENT, OFFICE OF Supervising Architect, Washington, D.C., December 28, 1910. Sealed proposals will be received at this office until 3 o'clock P. M. on the 7th day of February, 1911, and then opened for the construction, complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of the U. S. postoffice at Watertown, Wis., in accordance with drawings and specifications, copies of which may be obtained from the custodian of the site at Watertown, Wis., or at this office at the discretion of the supervising architect. James Knox Taylor, supervising architect.

TREASURY DEPARTMENT, OFFICE OF Supervising Architect, Washington, D.C., January 3, 1911. Sealed proposals will be received in this office until 3 o'clock P. M. on the 14th day of February, 1911, and then opened, for the construction, complete, (including plumbing, gas piping, heating apparatus, electric conduits and wiring,) of the U. S. postoffice at Barre, Vermont, in accordance with the drawings and specification, copies of which may be obtained from the Custodian of site at Barre, Vt., or at this office at the discretion of the Supervising Architect. James Knox Taylor, supervising architect.

TREASURY DEPARTMENT, OFFICE OF Supervising Architect, Washington, D. C., January 6, 1911. Sealed proposals will be received in this office until 3 o'clock P. M. on the 17th day of February, 1911, and then opened, for the construction, complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of the U. S. postoffice at Waxahachie, Texas, in accordance with the drawings and specification, copies of which may be obtained from the Custodian of site at Waxahachie, Tex., or at this office at the discretion of the supervising architect. James Knox Taylor, supervising architect.

TREASURY DEPARTMENT — OFFICE of the Supervising Architect, Washington, D. C., December 23, 1910.—Sealed Proposals will be received at this office until 3 o'clock p. m. on the 3rd day of February, 1911, and then opened, for the construction, complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of the United States Post Office at Hillsdale, Michigan, in accordance with drawings and specifications, copies of which may be obtained from the Custodian of site at Hillsdale, Mich., or at this office at the discretion of the Supervising Architect.

James Knox Taylor,
Supervising Architect.

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 27, 1910.—Sealed proposals will be received in this office until 3 o'clock p. m. on the 6th day of February, 1911, and then opened, for the construction, complete (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of the United States post office at Mount Clemens, Michigan, in accordance with drawings and specifications, copies of which may be obtained from the custodian of site at Mount Clemens, Mich., or at this office, at the discretion of the Supervising Architect.

James Knox Taylor,
Supervising Architect.

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 23, 1910.—Sealed proposals will be received at this office until 3 o'clock p. m. on the 3rd day of February, 1911, and then opened, for the extension, remodeling, etc. (including plumbing, gas piping, heating apparatus, and electric conduits and wiring system), of the United States post office and court house at Salt Lake City, Utah, in strict accordance with the drawings and specifications, copies of which may be obtained from the custodian at Salt Lake City, Utah, or at this office, in the discretion of the Supervising Architect.

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